DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 51 - PARALLEL FAN WITH REHEAT		
TU 51 RM 107 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 107 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 54 - PARALLEL FAN WITH REHEAT		
TU 54 RM 111 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 111 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 55 - PARALLEL FAN WITH REHEAT		
TU 55 RM 112 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 112 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 56 - NO FAN OR REHEAT		
TU 56 RM 113 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 113 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 57 - PARALLEL FAN WITH REHEAT		
TU 57 RM 113A FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 113A TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 58 - NO FAN WITH REHEAT		
TU 58 RM 115 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 115 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 59 - NO FAN OR REHEAT		
TU 59 CORRIDOR 102 FLOW	AI	VAV OUTPUT CFM'S
CORRIDOR 102 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 60 - NO FAN OR REHEAT		
TU 60 CORRIDOR 103A FLOW	AI	VAV OUTPUT CFM'S

CORRIDOR 103A TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 62 - NO FAN OR REHEAT		
TU 62 RM 120 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 120 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 63 - NO FAN OR REHEAT		
TU 63 RM 123A FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 123A TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TOTAL	**118**	

CONTROLLER #3 - HW BOILER AND PUMPS/CONVECTOR C2 & C5/OA TEMP

POINT INFO	TYPE	NOTES/COMMENTS
RM 103A NORTH ENTRY TEMP FOR CONVECTOR C2	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
RM 122 NORTH OUTER STORAGE TEMP FOR CONVECTOR C5	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
HOT WATER SUPPLY TEMP	AI	INSTALL NEW SENSOR. USE EXISTING WIRING
HOT WATER RETURN TEMP	AI	INSTALL NEW SENSOR. USE EXISTING WIRING
OUTSIDE AIR TEMP	AI	INSTALL NEW SENSOR. USE EXISTING WIRING
BOILER ENABLE (SEE NOTE)	AO/BO	INSTALL A NEW DC RELAY FOR BOILER ENABLE. USE EXISTING WIRING AND CONDUIT
BOILER ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
HOT WATER PUMP 1 STATUS	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
HOT WATER PUMP 2 STATUS	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
WATER METER	BI	PULSE = ?USE EXISTING DEVICE, WIRING AND CONDUIT
CONVECTOR C2 REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
CONVECTOR C2 REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
CONVECTOR C5 REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
CONVECTOR C5 REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
HOT WATER PUMP 1 STR/STP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
HOT WATER PUMP 2 STR/STP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	**16**	

*NOTE - The boiler enable output uses a 0-15 volt relay that energizes when it receives a 15 volt signal. Install a new DC relay that uses a binary output for control.

CONTROLLER #4 - DOMESTIC HW/CHILLER/1ST FLOOR MECH

POINT INFO	TYPE	NOTES/COMMENTS
MECH ROOM TEMP	AI	INSTALL NEW PLATE WALL SENSOR. USE EXISTING WIRING.
CHILL WATER SUPPLY TEMP	AI	INSTALL NEW SENSOR. USE EXISTING WIRING
CHILL WATER RETURN TEMP	AI	INSTALL NEW SENSOR. USE EXISTING WIRING
DOMESTIC HOT WATER RETURN TEMP	AI	INSTALL NEW SENSOR. USE EXISTING WIRING
ELECTRIC METER	BI	INSTALL NEW POWER METER WITH BACNET INTERFACE (OR EQUIVALENT). INSTALL NEW WIRING AND CONDUIT AS REQUIRED.
CHILLER ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
CHILL WATER PUMP 1 STATUS	BI	USE EXISTING DEVICE, WIRING AND CONDUIT

CHILL WATER PUMP 2 STATUS	BI	USE EXISTING DEVICE, WIP G AND CONDUIT
EXHAUST FAN 3 STATUS	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
EXHAUST FAN 4 STATUS	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
EXHAUST FAN 5 DAMPER	BO	2 POSITION DAMPER. USE EXISTING DEVICE, WIRING AND CONDUIT
CHILLER ENABLE	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
CHILL WATER PMP 1 STR/STP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
CHILL WATER PMP 2 STR/STP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
DOMESTIC HOT WATER PUMP STR/STP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
DOMESTIC HOT WATER HEATER STR/STP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	**16**	

CONTROLLER #5 - TU 61 ROOM 118 BREAK ROOM - SERIES FAN WITH REHEAT

POINT INFO	TYPE	NOTES/COMMENTS
TU 61 RM 118 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 118 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
CO2 ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	**7**	

CONTROLLER #6 - TU 42 RM 127C CONFERENCE ROOM - SERIES FAN WITH REHEAT

POINT INFO	TYPE	NOTES/COMMENTS
TU 42 RM 127C FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 127C TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
CO2 ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	**7**	

CONTROLLER #7 - TU 40 ROOM 127 (NO FAN) & CONVECTOR C1 FOR VESTIBULE RM 102A

POINT INFO	TYPE	NOTES/COMMENTS
TU 40 RM 127 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 127 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
RM 102A EAST VESTIBULE ENTRY TEMP	AI	INSTALL NEW WALL SENSOR. DO NOT INSTALL A SENSOR WITH SETPOINT CONTROL OR OVERRIDE BUTTON. USE EXISTING WIRING.
VAV DAMPER CONTROL	AO	DAMPER ACTUATOR
CO2 ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
VAV REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT

VAV REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
CONVECTOR C1 REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
CONVECTOR C1 REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	9	

CONTROLLER #8 - TU 37 ROOM 128 - PARALLEL FAN WITH REHEAT

POINT INFO	TYPE	NOTES/COMMENTS
TU 37 RM 128 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 128 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
CO2 ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	7	

CONTROLLER #9 - TU 52 RM 108B (NO FAN) & CONVECTOR C4 FOR VESTIBULE RM 101A

POINT INFO	TYPE	NOTES/COMMENTS
TU 52 RM 108B FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 108B TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
RM 101A SOUTH VESTIBULE ENTRY TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
VAV DAMPER CONTROL	AO	DAMPER ACTUATOR
CO2 ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
VAV REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
VAV REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
CONVECTOR C4 REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
CONVECTOR C4 REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	9	

CONTROLLER #10 - TU 53 RM 108A (NO FAN) & CONVECTOR C3 FOR VESTIBULE RM 126A

POINT INFO	TYPE	NOTES/COMMENTS
TU 53 RM 108A FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 108A TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
RM 126A WEST VESTIBULE ENTRY TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
VAV DAMPER CONTROL	AO	DAMPER ACTUATOR
CO2 ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
VAV REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
VAV REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT

CONVECTOR C3 REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND COND
CONVECTOR C3 REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	9	

CONTROLLER #33 - AIR HANDLING UNIT 2 - SECOND FLOOR

POINT INFO	TYPE	NOTES/COMMENTS
MIXED AIR TEMP	AI	INSTALL NEW AVERAGING SENSOR. USE EXISTING WIRING
SUPPLY AIR TEMP	AI	INSTALL NEW SENSOR. USE EXISTING WIRING
RETURN AIR TEMP	AI	INSTALL NEW SENSOR. USE EXISTING WIRING
BLDG STATIC PRESSURE	AI	4-20 mA = MINUS .5 TO PLUS .5 "WC. USE EXISTING DEVICE, WIRING AND CONDUIT
SUPPLY STATIC PRESSURE	AI	4-20 mA = 0-5 "WC. USE EXISTING DEVICE, WIRING AND CONDUIT
MIXED AIR DAMPER (OA, RA & EA DAMPERS)	AO	OUTSIDE, RETURN & EXHAUST DAMPERS. ONE OUTPUT TO 3 ACTUATORS. INSTALL NEW 2-10 VDC ELECTRONIC ACTUATORS ON EXISTING DAMPERS. WILL REQUIRE NEW WIRING AND CONDUIT FROM CONTROLLER TO ACTUATORS.
RETURN FAN VFD	AO	4-20 mA. USE EXISTING DEVICE, WIRING AND CONDUIT
SUPPLY FAN VFD	AO	4-20 mA. USE EXISTING DEVICE, WIRING AND CONDUIT
HEATING & COOLING VALVES	AO	CURRENTLY HEATING = 2-6 PSI, COOLING = 11-15 PSI WITH ONE OUTPUT TO BOTH VALVES. INSTALL NEW ELECTRONIC ACTUATORS ON EXISTING VALVES. WILL REQUIRE NEW WIRING AND CONDUIT FROM CONTROLLER TO VALVES.
FILTER ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
FREEZE STAT	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
RETURN VFD ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
SUPPLY VFD ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
SUPPLY DUCT HIGH PRESSURE SWITCH	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
EXHAUST FAN 2 STATUS	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
AHU FANS START/STOP	BO	STARTS BOTH FANS.USE EXISTING DEVICE, WIRING AND CONDUIT
EXHAUST FAN 2 START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	17	

**Note on heating and cooling valves above - it may be better to have separate outputs to these valves. This can be determined during the walk-through.

CONTROLLER #34 - VAV INTEGRATOR FOR 2ND FLOOR VAV'S - 27 VAV'S HOOKED UP TO AN INTEGRATOR CONTROLLER. THIS WILL REQUIRE 27 NEW VAV CONTROLLERS FOR THE 27 VAV BOXES.

POINT INFO	TYPE	NOTES/COMMENTS
TU 1 - PARALLEL FAN WITH REHEAT		
TU 1 RM 223 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 223 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 2 - PARALLEL FAN WITH REHEAT		
TU 2 RM 224E FLOW, CFM	AI	VAV OUTPUT CFM'S

RM 224E TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 3 - PARALLEL FAN WITH REHEAT		
TU 3 RM 224B FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 224B TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 4 - PARALLEL FAN WITH REHEAT		
TU 4 RM 224D FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 224D TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 5 - NO FAN OR REHEAT		
TU 5 RM 224 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 224 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 6 - PARALLEL FAN WITH REHEAT		
TU 6 RM 224A FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 224A TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 7 - PARALLEL FAN WITH REHEAT		
TU 7 RM 225 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 225 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 8 - PARALLEL FAN WITH REHEAT		
TU 8 RM 206A FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 206A TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT

REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 12 - PARALLEL FAN WITH REHEAT		
TU12 RM 209 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 209 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 13 - PARALLEL FAN WITH REHEAT		
TU13 RM 209A FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 209A TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 14 - PARALLEL FAN WITH REHEAT		
TU14 RM 209B FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 209B TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 15 - NO FAN OR REHEAT		
TU 15 CORRIDOR 203 FLOW	AI	VAV OUTPUT CFM'S
CORRIDOR 203 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 16 - NO FAN OR REHEAT		
TU 16 RM 208 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 208 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 17 - NO FAN OR REHEAT		
TU 17 RM 224F FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 224F TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 18 - NO FAN OR REHEAT		
TU 18 CORRIDOR 205 FLOW	AI	VAV OUTPUT CFM'S
CORRIDOR 205 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 19 - PARALLEL FAN WITH REHEAT		
TU19 RM 225 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 225 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT

TU 20 - NO FAN OR REHEAT		
TU 20 RM 220 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 220 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 21 - NO FAN WITH REHEAT		
TU 21 RM 218 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 218 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 22 - NO FAN WITH REHEAT		
TU 22 RM 217 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 217 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 23 - PARALLEL FAN WITH REHEAT		
TU 23 RM 215 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 215 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 24 - NO FAN OR REHEAT		
TU 24 CORRIDOR 204 FLOW	AI	VAV OUTPUT CFM'S
CORRIDOR 204 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 25 - NO FAN OR REHEAT		
TU 25 RM 211 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 211 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 26 - PARALLEL FAN WITH REHEAT		
TU 26 RM 212 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 212 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 27 - NO FAN OR REHEAT		
TU 27 RM 210E FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 210E TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
TU 28 - PARALLEL FAN WITH REHEAT		
TU 28 RM 210C FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 210C TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.

DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 29 - PARALLEL FAN WITH REHEAT		
TU 29 RM 210 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 210 TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TU 30 - PARALLEL FAN WITH REHEAT		
TU 30 RM 210A FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 210A TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	**133**	

CONTROLLER #35 - TU 9 ROOM 206E - SERIES FAN WITH REHEAT

POINT INFO	TYPE	NOTES/COMMENTS
TU 9 RM 206E FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 206E (EAST) TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
CO2 ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	**7**	

CONTROLLER #36 - TU 10 ROOM 206C - SERIES FAN WITH REHEAT

POINT INFO	TYPE	NOTES/COMMENTS
TU 10 RM 206C FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 206C (CENTER) TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
CO2 ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	**7**	

CONTROLLER #37 - TU 11 ROOM 206W - SERIES FAN WITH REHEAT

POINT INFO	TYPE	NOTES/COMMENTS
TU 11 RM 206W FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 206W (WEST) TEMP	AI	INSTALL NEW WALL SENSOR. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
CO2 ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	7	

ADDITIONAL REQUIREMENTS-ADD DISCHARGE SENSORS TO VAV'S W/REHEAT COILS AND CURRENT SENSING RELAYS VAV FAN STATUS'

POINT INFO	TYPE	NOTES/COMMENTS
TU1 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU2 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU3 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU4 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU6 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU7 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU8 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU9 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU10 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU11 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU12 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU13 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU14 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU19 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU21 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU22 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU23 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU26 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU28 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU29 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU30 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU31 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU33 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU36 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU37 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU40 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU41 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU42 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU43 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU44 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU48 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU49 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU51 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU52 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU53 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU54 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU55 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU57 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU58 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU61 DISCHARGE AIR SENSOR	AI	INSTALL NEW DISCHARGE AIR SENSOR
TU1 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU2 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU3 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS

TU4 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU6 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU7 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU8 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU9 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU10 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU11 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU12 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU13 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU14 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU19 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU23 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU26 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU28 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU29 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU30 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU31 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU33 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU36 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU37 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU40 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU41 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU42 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU43 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU48 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU49 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU51 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU52 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU53 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU54 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU57 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TU61 FAN STATUS	BI	INSTALL NEW CURRENT SENSING RELAY FOR FAN STATUS
TOTAL	**75**	

ADDITIONAL REQUIREMENTS - METERING

POINT INFO	TYPE	NOTES/COMMENTS
GAS METER	BI	PROVIDE PULSE METER HEAD FOR EXISTING GAS METER. PULSE HEAD WILL BE WIRED INTO NEW CONTROLLER AND WILL PROVIDE CURRENT AND TOTALIZED GAS CONSUMPTION.
ELECTRICAL METER	BI	**HAVE POWER METER IN CONTROLLER 4**
WATER METER	BI	**HAVE WATER METER IN CONTROLLER 3**
TOTAL	**1**	

*NOTE - VAV WALL SENSORS

All VAV wall temperature sensors and/or thermostats shall have the ability to access the VAV controller parameters either by using the buttons on the sensor itself or by plugging in a portable field service device for access using an available plug in port on the sensor.

*NOTE - WALL SENSORS/SETPOINT & OVERRIDE CONTROL

Install wall sensors with setpoint and override control in occupied areas unless specifically noted to not install this type sensor. Typical wall sensors for hangars, warehouse areas and mechanical rooms will be industrial grade plate style sensors. Most of the buildings will not use the setpoint or override functions at this time but may in the future as building requirements change. Most buildings will be programmed so that the area setpoint is set in software and not set by occupants. Final determination as to which buildings have occupant setpoint control will be made during the software programming. The setpoints will have high and low limits in buildings where occupant setpoint control is allowed. See specific building requirements for additional information.

**NOTE - SINGLE POINT SHELTER-IN-PLACE (SIP) SWITCH

All air handlers, exhaust fans, fan coils, [illegible]-powered VAV's, unit heaters, cabinet heaters and furnaces will be programmed to immediately shut down when the shelter-in-place switch is activated. The shelter-in-place switch is located in the main fire station (Bldg. 0003) control room. Essentially, when the shelter-in-place switch is activated all mechanical equipment with a control output and that moves air will be shutdown. When the switch is placed back into the normal position all of the equipment shutdown will restart with delays. The delays are needed to prevent a large load on the utility systems.

SEQUENCE OF OPERATIONS

AIR HANDLER 1 AND EXHAUST FAN 1

Occupied Mode - AHU 1 feeds the first floor VAV's. The AHU fans and exhaust fan 1 will run continuously during the occupied mode. The supply fan VFD will maintain a 1.25 "WC (adjustable) set point. The return fan VFD will operate using the following reset schedule: supply fan signal of 20 ma (adjustable) = return fan signal of 15 ma (adjustable), supply fan signal of 7 ma (adjustable) = return fan signal of 4 ma (adjustable). The DDC system will modulate the mixed air dampers, cooling valve and heating valve in sequence to maintain the supply air set point of 65 °F (adjustable). When the outside air increases to 73 °F (adjustable) the outside air damper will modulate to the minimum position. The mixed air dampers minimum position will be 20% (adjustable) of damper range. The mixed air temp will have a low limit set point of 45 °F (adjustable).

Fan Interlocks - When the supply fan is off the return fan and exhaust fan 1 will stop, close the mixed air dampers, the heating and cooling valves. When the freeze stat is in alarm stop the fans and open the heating valve. When the fire alarm panel is in alarm stop the fans and exhaust fan 1 and generate an alarm. When the supply pressure high limit is in alarm the supply fan will be stopped.

Unoccupied Mode - During the unoccupied mode the AHU will be off, the outside air damper and the relief damper will be closed and the return damper will be in the full recirculation mode. In a call for setback heating from the VAV's the damper positions will stay in the unoccupied mode.

Overrides - When any space sensor override button on the first floor is pushed AHU 1 will be placed in the occupied mode for 2 hours.

The AHU will have an Opstart/Morning Warmup mode. During the Morning Warmup mode the dampers will be in full recirculation position and the supply air will be reset to 80 °F (adjustable).

AIR HANDLER 2 AND EXHAUST FAN 2

Occupied Mode - AHU 2 feeds the second floor VAV's. The AHU fans and exhaust fan 2 will run continuously during the occupied mode. The supply fan VFD will maintain a 1.25 "WC (adjustable) set point. The return fan VFD will operate using the following reset schedule: supply fan signal of 20 ma (adjustable) = return fan signal of 15 ma (adjustable), supply fan signal of 7 ma (adjustable) = return fan signal of 4 ma (adjustable). The DDC system will modulate the mixed air dampers, cooling valve and heating valve in sequence to maintain the supply air set point of 65 °F (adjustable). When the outside air increases to 73 °F (adjustable) the outside air damper will modulate to the minimum position. The mixed air dampers minimum position will be 20% (adjustable) of damper range. The mixed air temp will have a low limit set point of 45 °F (adjustable).

Fan Interlocks - When the supply fan is off the return fan and exhaust fan 1 will stop, close the mixed air dampers, the heating and cooling valves. When the freeze stat is in alarm stop the fans and open the heating valve. When the fire alarm panel is in alarm stop the fans and exhaust fan 1 and generate an alarm. When the supply pressure high limit is in alarm the supply fan will be stopped.

Unoccupied Mode - During the unoccupied mode the AHU will be off, the outside air damper and the relief damper will be closed and the return damper will be in the full recirculation mode. In a call for setback heating from the VAV's the damper positions will stay in the unoccupied mode.

Overrides - When any space sensor override button on the first floor is pushed AHU 1 will be placed in the occupied mode for 2 hours.

The AHU will have an Opstart/Morning Warmup mode. During the Morning Warmup mode the dampers will be in full recirculation position and the supply air will be reset to 80 °F (adjustable).

VAV TERMINAL UNITS

First floor VAV's will operate on the same occupied mode schedule as AHU 1. Second floor VAV's will operate on the same occupied mode schedule as AHU 2.

Occupied Mode - VAV's with Series Fans and Reheat Coils
Series fan VAV's will be started. On a call for full cooling at temperature sensor the VAV terminal unit controller shall position the VAV box damper to deliver maximum scheduled air quantity and the heating control valve will be closed to the coil. As the call for cooling decreases controller shall modulate box damper closed to minimum scheduled air quantity. On a call for heating, after the damper is at minimum position, the heating control valve shall modulate to flow through coil. The reverse shall occur on a decrease in call for heating.

Unoccupied Mode - VAV's with Series Fans and Reheat Coils
Terminal box damper shall position to minimum airflow position. A call for heating during the unoccupied mode will start the VAV fan to recirculate air. The heating control valve shall modulate to maintain space set point. The setback set point is 55 °F (adjustable) with a 5 °F (adjustable) deadband.

Occupied Mode - VAV's with Series Fans - no Reheat Coils
Series fan VAV's will be started. On a call for full cooling at temperature sensor the VAV terminal unit controller shall position the VAV box damper to deliver maximum scheduled air quantity. As the call for cooling decreases controller shall modulate box damper closed to minimum scheduled air quantity. The reverse shall occur on a decrease in call for heating.

Unoccupied Mode - VAV's with Series Fans - no Reheat Coils
Terminal box damper shall position to minimum airflow position.

Occupied Mode - VAV's with Parallel Fans and Reheat Coils
On a call for full cooling at temperature sensor the VAV terminal unit controller shall position the VAV box damper to deliver maximum scheduled air quantity and the heating control valve will be closed to the coil. As the call for cooling decreases controller shall modulate box damper closed to minimum scheduled air quantity. On a call for heating, after the damper is at minimum position, the fan will start and the heating control valve shall modulate to flow through coil. The reverse shall occur on a decrease in call for heating.

Unoccupied Mode - VAV's with Parallel Fans and Reheat Coils
Terminal box damper shall position to minimum airflow position. A call for heating during the unoccupied mode will start the VAV fan to recirculate air. The heating control valve shall modulate to maintain space set point. The setback set point is 55 °F (adjustable) with a 5 °F (adjustable) deadband.

Occupied Mode - VAV's with Parallel Fans - no Reheat Coils
On a call for full cooling at temperature sensor the VAV terminal unit controller shall position the VAV box damper to deliver maximum scheduled air quantity. As the call for cooling decreases controller shall modulate box damper closed to minimum scheduled air quantity. On a call for heating, after the damper is at minimum position, the fan will start. The reverse shall occur on a decrease in call for heating.

Unoccupied Mode - VAV's with Parallel Fans - no Reheat Coils
Terminal box damper shall position to minimum airflow position.

Occupied Mode - VAV's with Reheat Coils
On a call for full cooling at temperature sensor the VAV terminal unit controller shall position the VAV box damper to deliver maximum scheduled air quantity. As the call for cooling decreases controller shall modulate box damper closed to minimum scheduled air quantity. On a call for heating, after the damper is at minimum position, the heating control valve shall modulate to flow through coil. The reverse shall occur on a decrease in call for heating.

Unoccupied Mode - VAV's with Reheat Coils
Terminal box damper shall position to minimum airflow position. A call for heating on any VAV during the unoccupied mode to maintain the setback temperature set point shall start the applicable air handling unit (AHU 1 for 1st floor and AHU 2 for 2nd floor). The heating control valve shall modulate to maintain space set point. The setback set point is 55 °F (adjustable) with a 5 °F (adjustable) deadband.

Occupied Mode - VAV's without Reheat Coils
On a call for full cooling at temperature sensor the VAV terminal unit controller shall position the VAV box damper to deliver maximum scheduled air quantity. As the call for cooling decreases controller shall modulate box damper closed to minimum scheduled air quantity. The reverse shall occur on a decrease in call for heating.

Unoccupied Mode - VAV's without Reheat Coils
Terminal box damper shall position to minimum airflow position.

Occupied Mode - VAV's with CO2 Monitoring
The VAV box damper will position to the maximum scheduled air quantity when the CO2 monitoring input indicates an alarm condition.

HONEYWELL HYDRONIC BOILER - The boiler will be enabled to operate when a hot water pump is running. The boiler setpoint is set by Honeywell. If the boiler goes into alarm, after a 60 second delay, a boiler alarm message will be sent to the appropriate pagers via a commercial paging system. This will require the ability to send the same alpha-numeric alarm message to multiple pagers. If the boiler is enabled and the hot water supply temp drops to 110 °F (adjustable) or rises to 200 °F (adjustable) and remains there for 30 minutes then a boiler/hot water supply alarm will be sent to the paging system. If at any time during the delay the hot water supply temperature returns to normal then the alarm condition will be terminated.

HOT WATER PUMPS CONTROL - When the outside air temp increases to 62 °F (adjustable) stop the hot water pumps. When the outside air temp decreases to 60 °F (adjustable) start the lead hot water pump. The lead hot water pump will be changed weekly based upon runtime. When the runtime lead pump changeover is made, both pumps shall run for 30 seconds (adjustable) before the lag pump is stopped. If a pump is commanded to run and the status switch indicates no flow after a 30 second delay (adjustable), a pump failure alarm will be generated and the lag pump will be given a start command.

CHILLER CONTROL - If the building is in the occupied mode and the outside air temp is greater than 62 °F (adjustable) and an air handler is calling for cooling then start the lead chilled water pump, delay 3 minutes, and enable the chiller after chilled water flow is proved. If any of these conditions are false, disable the chiller, delay 3 minutes and stop the chilled water pumps. If the outside air temp is less than 60 °F (adjustable) disable the chiller, delay 3 minutes and stop the chilled water pumps. The chiller will be disabled anytime at least one pump is not running. The chiller will operate on its own controls when enabled.

CHILLED WATER PUMPS CONTROL - The lead chilled water pump will be changed weekly based upon runtime. When the runtime lead pump changeover is made, both pumps shall run for 30 seconds (adjustable) before the lag pump is stopped. If a pump is commanded to run and the status switch indicates no flow after a 30 second delay (adjustable), a pump failure alarm will be generated and the lag pump will be given a start command. Both chilled water pumps will be started when the outside air temp drops to 30 °F (adjustable) and remain running until the outside air temp increase to 32 °F (adjustable).

DOMESTIC HOT WATER - The domestic hot water tank and pump will be enabled to run when the building is in the occupied mode.

EXHAUST FAN 5 DAMPER CONTROL - The damper will open when the mech room temp increases to 75 °F (adjustable) and close when the temp drops to 70 °F (adjustable).

CONVECTOR C1 ROOM 102A WEST ENTRY - Modulate heating valve to maintain 71 °F (adjustable) space temp during occupied mode. Modulate heating valve to maintain 55 °F (adjustable) space temp during unoccupied mode. Occupied mode shall be the same as AHU 1.

CONVECTOR C2 ROOM 103A NORTH ENTRY - Modulate heating valve to maintain 71 °F (adjustable) space temp during occupied mode. Modulate heating valve to maintain 55 °F (adjustable) space temp during unoccupied mode. Occupied mode shall be the same as AHU 1.

CONVECTOR C3 ROOM 126A EAST ENTRY - Modulate heating valve to maintain 71 °F (adjustable) space temp during occupied mode. Modulate heating valve to maintain 55 °F (adjustable) space temp during unoccupied mode. Occupied mode shall be the same as AHU 1.

CONVECTOR C4 ROOM 101A SOUTH ENTRY - Modulate heating valve to maintain 71 °F (adjustable) space temp during occupied mode. Modulate heating valve to maintain 55 °F (adjustable) space temp during unoccupied mode. Occupied mode shall be the same as AHU 1.

CONVECTOR C5 ROOM 122 OUTER STORAGE - Modulate heating valve to maintain 71 °F (adjustable) space temp during occupied mode. Modulate heating valve to maintain 55 °F (adjustable) space temp during unoccupied mode. Occupied mode shall be the same as AHU 1.

BLDG. 2007 SQUAD OPS #3

BLDG. TOTAL POINTS	523

TOTAL EXISTING POINTS	432
TOTAL NEW POINTS	91

This building is similar to Bldg. 2005.

Controllers 1 - 4 are located in the ground floor mechanical room. Controllers 33 & 34 are located in the 2nd floor mechanical room. All other controllers are located on the respective VAV's.

The VAV and room numbers on the prints do not match the numbers in the programming. This will need to be rectified when the new controls programming is accomplished.

All pneumatic control and actuators will be converted to electronic at this building. See point notes/comments for additional information.

The existing power meter will be replaced with a BACnet meter. See controller 4 notes/comments for additional information.

CONTROLLER #1 - AIR HANDLING UNIT 1 - FIRST FLOOR

POINT INFO	TYPE	NOTES/COMMENTS
MIXED AIR TEMP	AI	INSTALL NEW AVERAGING SENSOR. USE EXISTING WIRING
SUPPLY AIR TEMP	AI	INSTALL SENSOR. USE EXISTING WIRING
RETURN AIR TEMP	AI	INSTALL SENSOR. USE EXISTING WIRING
BLDG STATIC PRESSURE	AI	4-20 mA = MINUS .5 TO PLUS .5 "WC. USE EXISTING DEVICE, WIRING AND CONDUIT
SUPPLY STATIC PRESSURE	AI	4-20 mA = 0-5 "WC. USE EXISTING DEVICE, WIRING AND CONDUIT
RETURN AIRFLOW MEASURING STATION	AI	4-20 mA = 0-2800 FPM. USE EXISTING DEVICE, WIRING AND CONDUIT
SUPPLY AIRFLOW MEASURING STATION	AI	4-20 mA = 0-2500 FPM? USE EXISTING DEVICE, WIRING AND CONDUIT
MIXED AIR DAMPER (OA, RA & EA DAMPERS)	AO	OUTSIDE, RETURN & EXHAUST DAMPERS. ONE OUTPUT TO 3 ACTUATORS. INSTALL NEW 2-10 VDC ELECTRONIC ACTUATORS ON EXISTING DAMPERS. WILL REQUIRE NEW WIRING AND CONDUIT FROM CONTROLLER TO ACTUATORS.
RETURN FAN VFD	AO	4-20 mA = 10-60 Hz. USE EXISTING DEVICE, WIRING AND CONDUIT
SUPPLY FAN VFD	AO	4-20 mA = 10-60 Hz. USE EXISTING DEVICE, WIRING AND CONDUIT
HEATING & COOLING VALVES	AO	CURRENTLY HEATING = 2-6 PSI, COOLING = 11-15 PSI WITH ONE OUTPUT TO BOTH VALVES. INSTALL NEW ELECTRONIC ACTUATORS ON EXISTING VALVES. WILL REQUIRE NEW WIRING AND CONDUIT FROM CONTROLLER TO VALVES.
FILTER ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
AIR COMPRESSOR LOW ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
OVERRIDE BUTTON (LOCATED IN ENTRY FOYER AREA)	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
FREEZE STAT	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
RETURN VFD ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
SUPPLY VFD ALARM	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
FIRE ALARM PANEL INPUT	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
SUPPLY DUCT HIGH PRESSURE	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
EXHAUST FAN 1 STATUS	BI	USE EXISTING DEVICE, WIRING AND CONDUIT
AHU FANS START/STOP	BO	STARTS BOTH FANS.USE EXISTING DEVICE, WIRING AND CONDUIT
EXHAUST FAN 1 START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
TOTAL	22	

CONTROLLER #2 - VAV INTEGF `OR FOR 1ST FLOOR VAV'S - 29 `V'S HOOKED UP TO AN INTEGRATOR CONTROLLER. THIS WILL REQUIRE 29 NEW VAV CONTROLLERS FOR THE 29 VAV BOXES.

POINT INFO	TYPE	NOTES/COMMENTS
FPVAV-1 - FAN POWERED WITH REHEAT		
RM 125B FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 125B TEMP	AI	INSTALL NEW WALL SENSOR. USE EXISTING WIRING. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
FPVAV-2 - FAN POWERED WITH REHEAT		
RM 127B FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 127B TEMP	AI	INSTALL NEW WALL SENSOR. USE EXISTING WIRING. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
FPVAV-3 - FAN POWERED WITH REHEAT		
RM 127C FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 127C TEMP	AI	INSTALL NEW WALL SENSOR. USE EXISTING WIRING. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
FPVAV-4 - FAN POWERED WITH REHEAT		
RM 127E FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 127E TEMP	AI	INSTALL NEW WALL SENSOR. USE EXISTING WIRING. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
FPVAV-5 - FAN POWERED WITH REHEAT		
RM 128 FLOW, CFM	AI	VAV OUTPUT CFM'S
RM 128 TEMP	AI	INSTALL NEW WALL SENSOR. USE EXISTING WIRING. CONTROLLER ACCESS FROM SENSOR REQUIRED. SEE NOTES BELOW.
DAMPER CONTROL	AO	DAMPER ACTUATOR
FAN START/STOP	BO	USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE OPEN SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT
REHEAT VLV (FLOATING)	BO	FLOATING CONTROL VALVE CLOSE SIGNAL. USE EXISTING DEVICE, WIRING AND CONDUIT