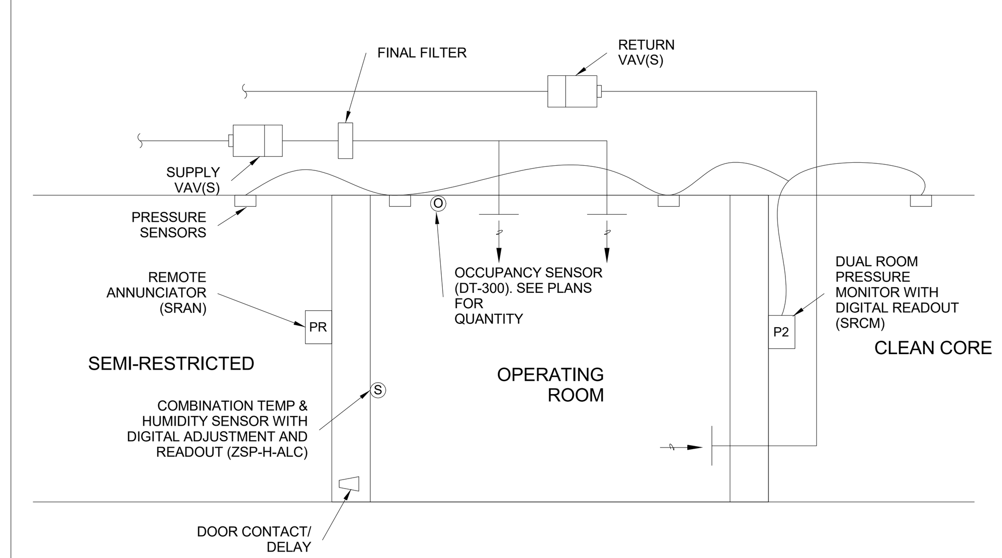
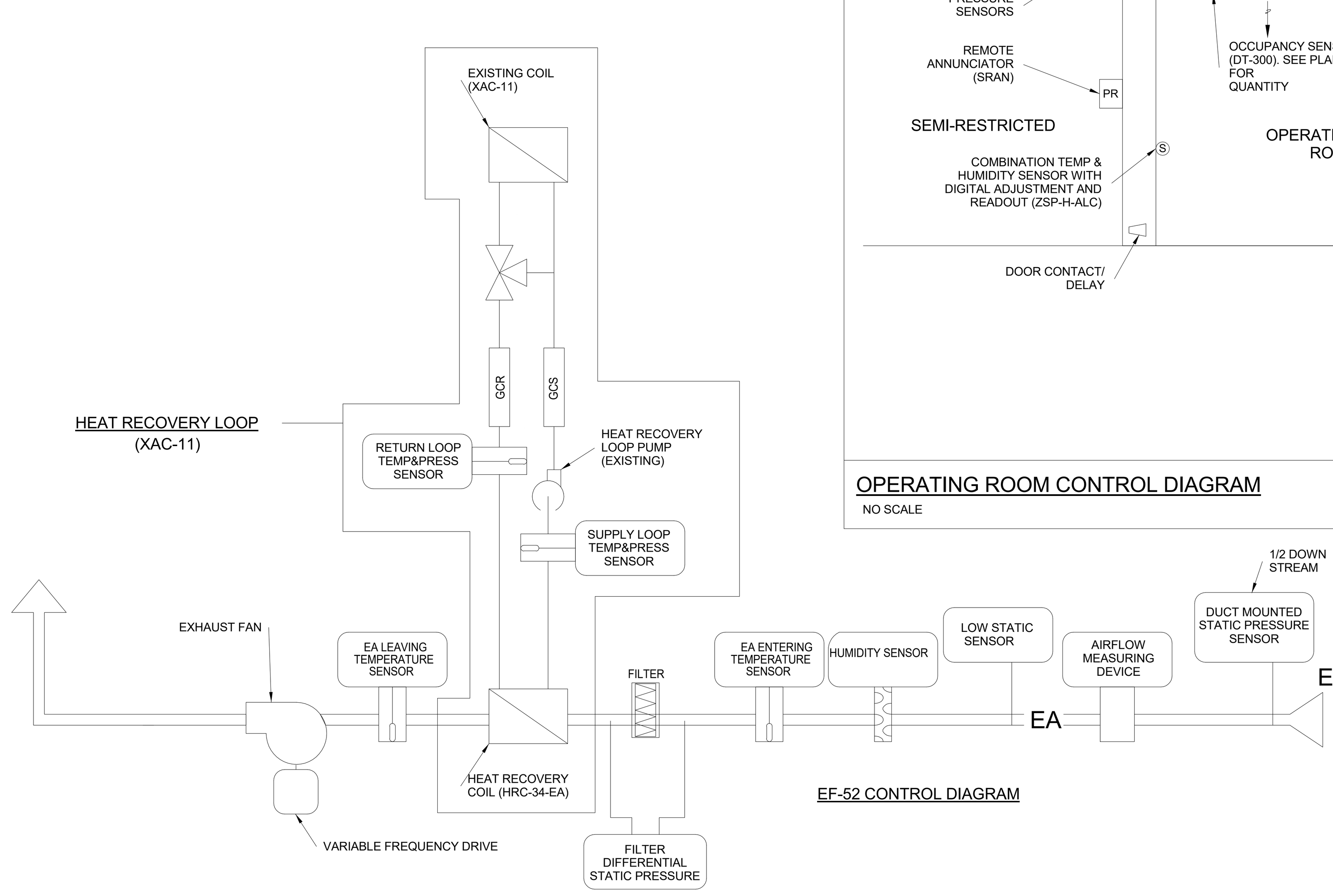
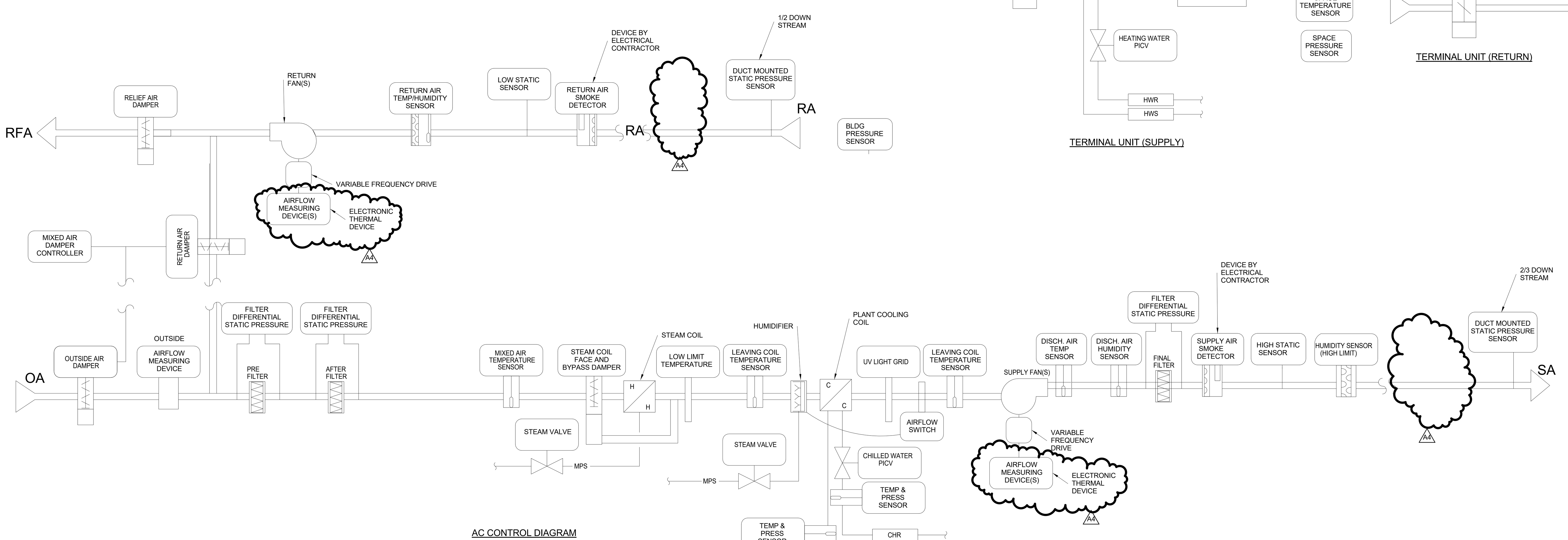


OPERATING ROOM CONTROL DIAGRAM

NO SCALE



EF-52 CONTROL DIAGRAM



AC CONTROL DIAGRAM

AC-53 SEQUENCE OF OPERATION

I. OCCUPIED MODE:

VENTILATION
THE OUTSIDE AIR DAMPER SHALL OPEN BEFORE FAN STARTS TO PROVIDE MINIMUM SCHEDULED OUTDOOR AIRFLOW.

SUPPLY FAN
START/STOP: THE SUPPLY FAN WILL BE STARTED ACCORDING TO THE SCHEDULE. IF THE SUPPLY FAN STATUS DOES NOT MATCH THE COMMANDED VALUE, AN ALARM WILL BE GENERATED.
VFD (FAULT DETECTION) RESET : IF THE SUPPLY FAN DOES NOT START, THE DDC SYSTEM SHALL WAIT 30 SECONDS (ADJ.) AND RE-ATTEMPT. IF THE VFD DOES NOT START AGAIN THE THIRD TIME, AN ALARM WILL BE GENERATED.
STATUS: IF CURRENT STATUS SWITCH DOES NOT PROVE OPERATION, THE UNIT SHALL SHUT DOWN AND AN ALARM WILL BE GENERATED.
SPEED CONTROL: THE SUPPLY FAN WILL MODULATE TO MAINTAIN A MINIMUM STATIC PRESSURE IN THE SUPPLY DUCTWORK. ON A DECREASE IN SYSTEM LOAD, THE DDC SYSTEM SHALL REDUCE THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE UNTIL ONE TERMINAL AIR BOX DAMPER IS 95% OPEN. ON AN INCREASE IN SYSTEM LOAD, THE DDC SYSTEM SHALL INCREASE THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE (NOT-TO-EXCEED THE FINAL SETPOINT) UNTIL ONE TERMINAL AIR BOX DAMPER IS 95% OPEN. COORDINATE SYSTEM AIRFLOW WITH TEST AND BALANCING CONTRACTOR.

RETURN FAN(S)
START/STOP: THE SUPPLY FAN WILL BE STARTED ACCORDING TO THE SCHEDULE. IF THE SUPPLY FAN STATUS DOES NOT MATCH THE COMMANDED VALUE, AN ALARM WILL BE GENERATED.
VFD (FAULT DETECTION) RESET : IF THE RETURN FAN(S) DO NOT START, THE DDC SYSTEM SHALL WAIT 30 SECONDS (ADJ.) AND RE-ATTEMPT. IF THE VFD DOES NOT START AGAIN THE THIRD TIME, AN ALARM WILL BE GENERATED.
STATUS: IF CURRENT STATUS SWITCH DOES NOT PROVE OPERATION, THE UNIT SHALL SHUT DOWN AND AN ALARM WILL BE GENERATED.
SPEED CONTROL: PROVIDE AN OFFSET ALGORITHM FOR THE RETURN FAN RELATIVE TO THE SUPPLY FAN TO MAINTAIN A SLIGHTLY POSITIVE PRESSURE AND ALSO MAINTAIN PRESSURE RELATIONSHIP REQUIREMENTS OF EACH PROCEDURE ROOM ZONES. COORDINATE SYSTEM AIRFLOW WITH TEST AND BALANCING CONTRACTOR.

DISCHARGE AIR CONTROL
COOLING:
-THE COOLING COIL PICV VALVE WILL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 55ºF (ADJ.).

HEATING:
-THE DDC SYSTEM WILL MEASURE EACH OF THE SPACE TEMPERATURES AND THE "OUTSIDE AIR DRY BULB REFERENCE TEMPERATURE".
-THE STEAM HEATING COIL VALVE TO FULLY OPEN BELOW 32°F.
-THE FACE AND BYPASS DAMPERS AND STEAM HEATING VALVE WILL MODULATE TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT OF 55ºF (ADJ.) ABOVE 32°F.

ECONOMIZER:
-WHEN THE OUTSIDE AIR ENTHALPY IS LOWER THAN THE RETURN AIR ENTHALPY, THE UNIT WILL OPERATE IN ECONOMIZER MODE. THE MIXING BOX DAMPERS WILL MODULATE TO MAINTAIN THE DISCHARGE AIR SUPPLY TEMPERATURE SETPOINT OF 55ºF (ADJ.).
-OPERATE ECONOMIZER WITH SUPPLEMENTAL MECHANICAL COOLING WHEN THE OUTDOOR AIR IS ABOVE 55ºF (ADJ.) AND THE OUTSIDE AIR ENTHALPY IS LOWER THAN THE RETURN AIR ENTHALPY.

HUMIDIFICATION
-THE HUMIDIFIER WILL BE ENABLED AND MODULATE TO MAINTAIN THE RETURN AIR RELATIVE HUMIDITY SETPOINT OF 35% RH (ADJ.) AS SENSED BY THE RETURN AIR RELATIVE HUMIDITY SENSOR. THE HUMIDITY HIGH LIMIT CONTROLLER WILL OVERRIDE THE OUTPUT IF NECESSARY TO PREVENT THE DISCHARGE AIR HUMIDITY FROM EXCEEDING 65% (ADJ.).
-THE HUMIDIFIER CONTROL VALVE SHALL MODULATE TO MAINTAIN THE RETURN AIR RELATIVE HUMIDITY SETPOINT.

II. UNOCCUPIED MODE:

VENTILATION
THE OUTSIDE AIR DAMPER SHALL REMAIN OPEN TO PROVIDE THE SAME MINIMUM SCHEDULED OUTDOOR AIRFLOW AS OCCUPIED MODE.

SUPPLY AND RETURN FANS
FANS WILL MODULATE AS NECESSARY TO MAINTAIN THE SHARED NIGHT SETBACK ZONE PRESSURE SETPOINTS.

DISCHARGE AIR CONTROL
THE UNIT DISCHARGE AIR TEMPERATURE WILL RESET AS NECESSARY TO MAINTAIN THE SHARED NIGHT SETBACK ZONE TEMPERATURE SETPOINTS.

OPTIMUM START-UP:
HEATING: THIS CYCLE SHALL OVERRIDE THE UNOCCUPIED CYCLE. THE DDC SYSTEM SHALL MEASURE EACH OF THE SPACE TEMPERATURES AND THE "OUTSIDE AIR DRY BULB REFERENCE TEMPERATURE" TO DETERMINE THE MINIMUM RUN TIME TO WARM THE SPACES TO THEIR SETPOINT. WHEN THE COMPUTED START TIME IS REACHED, THE UNIT DISCHARGE AIR TEMPERATURE SHALL BE 85ºF (ADJ.). THE SYSTEM SHALL CONTINUE TO OPERATE IN THIS MODE UNTIL ALL ZONE TEMPERATURES EXCEED A SETPOINT OF 65ºF (ADJ.). AT THAT TIME, THE DDC SYSTEM SHALL SWITCH TO OCCUPIED CONTROL.
COOLING: THIS CYCLE WILL OVERRIDE THE UNOCCUPIED CYCLE. THE DDC SYSTEM SHALL MEASURE EACH OF THE SPACE TEMPERATURES AND THE "OUTSIDE AIR DRY BULB REFERENCE TEMPERATURE" TO DETERMINE THE MINIMUM RUN TIME TO COOL THE SPACES TO THEIR SETPOINT. WHEN THE COMPUTED START TIME IS REACHED, THE UNIT DISCHARGE AIR TEMPERATURE SHALL BE 55ºF (ADJ.). THE SYSTEM SHALL CONTINUE TO OPERATE IN THIS MODE UNTIL ALL ZONE TEMPERATURES ARE LESS THAN A SETPOINT OF 78ºF (ADJ.). AT THAT TIME, THE DDC SYSTEM SHALL SWITCH TO OCCUPIED CONTROL.

III. SHUTDOWN MODE:

WHEN THE UNIT IS SHUTDOWN BY EITHER A STOP COMMAND OR SYSTEM SAFETY THE UNIT WILL BE SET AS FOLLOWS:
- SUPPLY FAN WILL BE OFF
- RETURN FAN WILL BE OFF
- SUPPLY FAN VFD WILL BE COMMANDED TO 0%
- RETURN FAN VFD WILL BE COMMANDED TO 0%
- OUTSIDE AIR DAMPER WILL CLOSE
- HUMIDIFIER WILL BE OFF
- HEATING COIL CONTROL VALVE(S) SHALL CLOSE. UNLESS OUTSIDE AIR TEMPERATURE IS BELOW 35°F THEN IT WILL REMAIN 10% OPEN
- COOLING COIL VALVES WILL CLOSE
- ALL FIRE/SMOKE AND SMOKE DAMPERS ASSOCIATED WITH THE AIR HANDLING SYSTEM WILL CLOSE
- UV LIGHTS WILL BE OFF

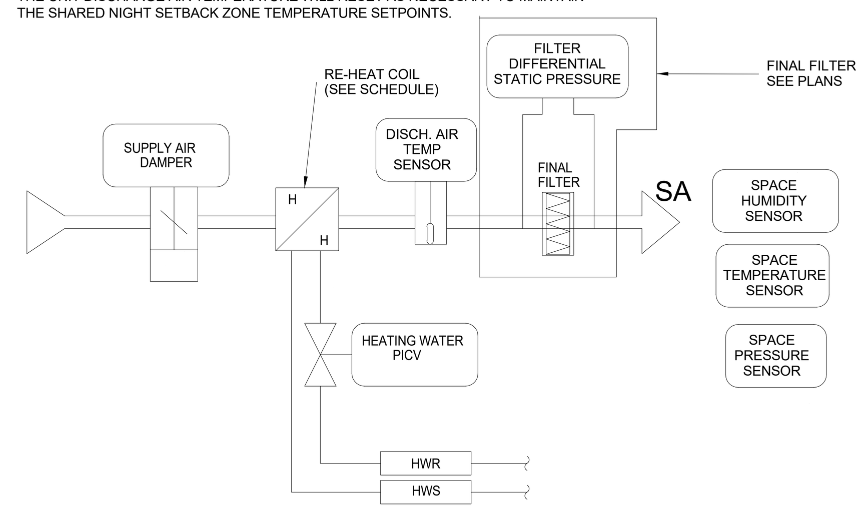
IV. SAFETY MODES:

GENERAL
ALL OF THE SAFETY DEVICES ARE MANUAL RESET; THE DEVICE THAT HAS TRIPPED MUST BE MANUALLY RESET BEFORE RESTARTING THE AIR HANDLING UNIT.

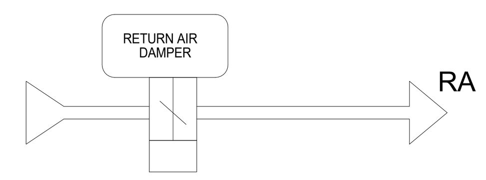
TEMPERATURE LOW LIMIT
IF TEMPERATURE FALLS BELOW SETPOINT THE SUPPLY AND RETURN FANS WILL BE SHUTDOWN, THE OUTDOOR AIR DAMPER SHALL CLOSE, AND STEAM VALVE COMMANDED 100% OPEN.
SMOKE ALARM : THE SUPPLY AND RETURN FANS WILL SHUTDOWN.
DISCHARGE AIR TEMPERATURE LIMITS: IF MORE THAN 5ºF (ADJ.) ABOVE OR BELOW THE SETPOINT, AN ALARM WILL BE GENERATED.
DUCTWORK HIGH STATIC PRESSURE: IF THE DIFFERENTIAL PRESSURE SWITCH SENSES A DISCHARGE PRESSURE THAT IS GREATER THAN SETPOINT, THE FAN SHALL BE SHUTDOWN. DDC SYSTEM SHALL MONITOR THE STATUS OF THE DIFFERENTIAL PRESSURE SWITCH.
DUCTWORK LOW STATIC PRESSURE: IF THE DIFFERENTIAL PRESSURE SWITCH SENSES A DISCHARGE PRESSURE THAT IS LESS THAN SETPOINT, THE FAN SHALL BE SHUTDOWN. DDC SYSTEM SHALL MONITOR THE STATUS OF THE DIFFERENTIAL PRESSURE SWITCH.
PRE-FILTER(PF-1): INSTALL A DIFFERENTIAL STATIC PRESSURE TRANSDUCER ACROSS FILTER BANK. IF THE DIFFERENTIAL STATIC PRESSURE EXCEEDS 0.6" W.C. (ADJ.), AN ALARM WILL BE GENERATED.
PRE-FILTER(PF-2): INSTALL A DIFFERENTIAL STATIC PRESSURE TRANSDUCER ACROSS FILTER BANK. IF THE DIFFERENTIAL STATIC PRESSURE EXCEEDS 0.6" W.C. (ADJ.), AN ALARM WILL BE GENERATED.
PRE-FILTER(AF-1): INSTALL A DIFFERENTIAL STATIC PRESSURE TRANSDUCER ACROSS FILTER BANK. IF THE DIFFERENTIAL STATIC PRESSURE EXCEEDS 1.0" W.C. (ADJ.), AN ALARM WILL BE GENERATED.
ADDITIONAL SAFETIES: SEE POINTS LIST FOR ADDITIONAL SAFETIES NOT INCLUDED IN THIS LIST.

V. OTHER:

UV LIGHTS
UV LIGHTS SHALL AUTOMATICALLY TURN ON WHEN CHILLED WATER IS BEING SUPPLIED TO THE COOLING COIL AND AUTOMATICALLY TURN OFF WHEN ANY AHU ACCESS DOORS EXPOSING PERSONNEL TO UV LIGHT ARE OPENED OR WHEN CHILLED WATER FLOW CEASES. THE UV LIGHT WILL HAVE MANUAL OVERRIDE CONTROL THROUGH THE CONTROLS PANEL. ALSO, PROVIDE A SEPARATE UV "EMERGENCY POWER OFF" SWITCH ADJACENT TO THE MAIN CHILLED WATER COIL ACCESS DOOR.



TERMINAL UNIT (SUPPLY)



TERMINAL UNIT (RETURN)

TERMINAL UNIT (SUPPLY) SEQUENCE OF OPERATION

A4

RUN CONDITIONS - SCHEDULED OR OCCUPANCY SENSOR(S):
THE UNIT SHALL RUN ACCORDING TO A USER DEFINED TIME SCHEDULE OR WHEN OCCUPANCY SENSOR SHOWS SPACE IS OCCUPIED IN THE FOLLOWING MODES:

OCCUPIED MODE:
74°F (ADJ.) COOLING SETPOINT.
70°F (ADJ.) HEATING SETPOINT.

UNOCCUPIED MODE (STANDBY):
78°F (ADJ.) COOLING SETPOINT.
70°F (ADJ.) HEATING SETPOINT.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
- LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

ZONE SETPOINT ADJUST:
- THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SETPOINTS OF THE ZONE SENSOR.

REVERSING VARIABLE VOLUME TERMINAL UNIT - FLOW CONTROL:
THE UNIT SHALL MAINTAIN ZONE SETPOINTS BY CONTROLLING THE AIRFLOW THROUGH ONE OF THE FOLLOWING:

OCCUPIED:
- WHEN ZONE TEMPERATURE IS GREATER THAN ITS COOLING SETPOINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM OCCUPIED AIRFLOW (ADJ.)AND THE MAXIMUM COOLING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED.
- WHEN THE ZONE TEMPERATURE IS BETWEEN THE COOLING SETPOINT AND THEHEATING SETPOINT, THE ZONE DAMPER SHALL MAINTAIN THE MINIMUM REQUIREDZONE VENTILATION (ADJ.).
- WHEN ZONE TEMPERATURE IS LESS THAN ITS HEATING SETPOINT, THE CONTROLLER SHALL ENABLE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT ITS HEATING SETPOINT. ADDITIONALLY, IF WARM AIR IS AVAILABLE FROM THE AHU, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM OCCUPIED AIRFLOW (ADJ.) AND THE MAXIMUM HEATING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED.

REHEATING COIL VALVE:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE REHEATING COIL VALVE OPEN ON DROPPING TEMPERATURE TO MAINTAIN ITS HEATING SETPOINT.

REHEATING - HIGH DISCHARGE AIR TEMPERATURE LIMIT:
THE CONTROLLER SHALL MEASURE THE DISCHARGE AIR TEMPERATURE AND LIMIT REHEATING IF THE DISCHARGE AIR TEMPERATURE IS MORE THAN 15°F (ADJ.) ABOVE THE ZONE TEMPERATURE.

DISCHARGE AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
- LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.).
FINAL FILTER A DIFFERENTIAL STATIC PRESSURE TRANSDUCER ACROSS FILTER BANK. IF THE DIFFERENTIAL STATIC PRESSURE EXCEEDS 1.0" W.C. (ADJ.), AN ALARM WILL BE GENERATED.

CLEAN ROOM SPACE HUMIDITY MONITORING

THE FOLLOWING ROOMS REQUIRE HUMIDITY MONITORING:
ALL OPERATING ROOMS, CLEAN CORE (2 LOCATIONS), CLEAN STORAGE ROOMS.

TERMINAL UNIT (RETURN) SEQUENCE OF OPERATION

RUN CONDITIONS
THE UNIT SHALL RUN CONTINUOUSLY TO MAINTAIN NEGATIVE PRESSURE IN EACH ROOM.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- ROOM PRESSURE: IF THE SPACE PRESSURE IS MORE OR LESS THAN THE SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

OCCUPIED MODE:
-UNIT CONTROLLER WILL MODULATE ITS AIR DAMPER TO MAINTAIN OCCUPIED PRESSURE RELATIONSHIP PER DRAWINGS.

UNOCCUPIED MODE:
-UNIT CONTROLLER WILL MODULATE ITS AIR DAMPER TO MAINTAIN UNOCCUPIED PRESSURE RELATIONSHIP PER DRAWINGS.

HEAT RECOVERY LOOP SEQUENCE OF OPERATION

THE CONTROLLER SHALL ENERGIZE AND MODULATE LOOP PUMP FOR ENERGY RECOVERY AS FOLLOWS:
COOLING RECOVERY MODE: THE LOOP PUMP SHALL RUN CONTINUOUSLY.
THE CONTROLLER SHALL MEASURE THE DISCHARGE AIR TEMPERATURE (DOWNSTREAM OF THE OUTSIDE AIR COIL) AND MODULATE THE RUNAROUND LOOP PUMP TO MAINTAIN A SETPOINT OF 2°F (ADJ.) LESS THAN THE UNIT SUPPLY AIR TEMPERATURE SETPOINT. THE RUN-AROUND LOOP SHALL RUN FOR COOL RECOVERY WHENEVER:
A) EXHAUST AIR TEMPERATURE (EF-3) IS 5°F (ADJ.) OR MORE BELOW THE OUTSIDE AIR TEMPERATURE.
B) AND THE UNIT IS IN A COOLING MODE.
C) AND THE SUPPLY FAN IS ON.

HEATING RECOVERY MODE: THE LOOP PUMP SHALL RUN CONTINUOUSLY,
THE CONTROLLER SHALL MEASURE THE DISCHARGE AIR TEMPERATURE (DOWNSTREAM OF THE OUTSIDE AIR COIL) AND MEASURE THE RUN-AROUND LOOP PUMP TO MAINTAIN A SETPOINT OF 2°F (ADJ.) GREATER THAN THE UNIT SUPPLY AIR TEMPERATURE SETPOINT. THE RUNAROUND LOOP SHALL RUN FOR THE HEAT RECOVERY WHENEVER:
A) EXHAUST AIR TEMPERATURE (EF-3) IS 5°F (ADJ.) OR MORE ABOVE THE OUTSIDE AIR TEMPERATURE.
B) AND THE UNIT IS IN A HEATING MODE.
C) AND THE SUPPLY FAN IS ON.

FROST PROTECTION: THE LOOP PUMP SHALL RUN AT 100% IN ORDER TO CIRCULATE WATER THROUGH THE EXHAUST AIR COIL WHENEVER:
A) LOOP TEMPERATURE DROPS BELOW 33°F (ADJ.)
B) OR THE EXHAUST AIR TEMPERATURE DROPS BELOW 30°F (ADJ.) ALARMS SHALL BE PROVIDED AS FOLLOWS:
I) LOOP PUMP FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
II) LOOP PUMP IN-HAND: COMMANDED OFF, BUT THE STATUS IS ON.
II) LOOP PUMP RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

DATA ROOM FAN COIL UNIT

MAP BACNET POINTS TO DDC SYSTEM

COORDINATE ALL SEQUENCE OF OPERATIONS WITH TEST AND BALANCING CONTRACTOR.

VFDS TO BE PROVIDED BY CONTROLS CONTRACTOR, SEE SCHEDULE.

POINT LEGEND | SYSTEM OUTPUTS (BIN-ARY, ANALOG) | SYSTEM INPUTS (BINARY, ANALOG) | SYSTEM SOFTWARE/CONTROL (ALARM PROCESSING, APPLICATION/FUNCTION) | PAGE:

	POINT ID	PRIORITY/ADD-ALTERNATE NO.	–	ELECTRIC DEVICE	START/STOP	OPEN/CLOSE	SETPOINT ADJ.	SPEED (HZ)	VALVE POSITION	DAMPER POSITION	STATUS	ALARM	PRESSURE	HIGH HUMIDITY	HIGH STATIC PRESSURE	LOW TEMPERATURE	–	TEMPERATURE (TI)	PRESSURE	POSITION	FLOW	PERCENT	–	CARBON MONOXIDE	HUMIDITY	kw (ENERGY)	Local Alarm Panel	Area Alarm Panel	Master Alarm Panel	HIGH LIMIT	LOW LIMIT	–	Status Alarm	SCHEDULE START/STOP	FUNCTION	DUTY CYCLE	TEMPERATURE ECONOMIZER	ENTHALPY ECONOMIZER	TEMPERATURE RESET	DEMAND LIMITING	TEMPERATURE OVERRIDE	STATIC PRESSURE RESET	–	–	PRESSURE/VOLUME CONTROL	FAILURE MODE	SPACE TEMP. CONTROL	FULL COMMUNICATION	TRENDING	REMARKS
VAV ROOFTOP UNIT (AC-53)																																																		
Return Air Temperature	AI																	●																																●	
Return Air Humidity	AI																								●																											●	
Return Air Flow (cfm)	AI																				●									●	●																			●	
Mixed Air Temperature	AI											●						●																																●	
Pre-Heat Coil Temperature	AI																	●																																●	
Cooiling Coil Temperature	AI																	●																																●	
Discharge Air Temperature	AI						●											●												●									●											●	
Discharge Static Pressure	AI						●					●	●						●																								●							●	
Supply Air Flow (cfm)	AI																				●									●	●																			●	
Outside Air Flow (cfm)	AI																				●									●	●																			●	
OUTSIDE AIR TEMPERATURE	AI																	●																																●	
RETURN LOW PRESSURE	BI											●	●						●												●																				
RETURN FAN STATUS	BI										●																																							●	
SUPPLY FAN STATUS	BI										●																																							●	
MIXED AIR LOW LIMIT	BI											●				●															●																				
SUPPLY PRESSURE HIGH LIMIT	BI											●			●				●											●																					
SUPPLY FAN VFD ALARM	BI											●																																					
RETURN FAN VFD ALARM	BI											●																																					
PRE&FINAL FILTER STATUS	BI										●								●											●																					
SMOKE DETECTOR STATUS	BI										●																																								
AHU ACCESS DOORS STATUS	BI																																																		INTERLOCKS WITH AC UNIT
RETURN FAN VFD SPEED	AO							●																																											
SUPPLY FAN VFD SPEED	AO							●																																											
OUTSIDE AIR DAMPER	AO									●																											●														
RETURN AIR DAMPER	AO									●																											●														
RELIEF AIR DAMPER	AO									●																											●														
STEAM HEAT VALVE	AO								●																																										
PRE-HEAT FACE & BYPASS	AO									●																																									
COOLING VALVE	AO								●												●																														
STEAM HUMIDIFIER VALVE	AO								●																																										
RETURN FAN START/STOP	BO				●																												●	●																	
SUPPLY FAN START/STOP	BO				●																												●	●																	
UV LIGHTS	BO				●																																														
BUILDING PRESSURE	BI												●																																						
CHS Temp & Press	AI																	●	●																															●	
CHR Temp & Press	AI																	●	●																															●	
TERMINAL UNIT (SUPPLY)																																																		
Discharge Air Temperature	AI						●											●																																	
Airflow (cfm)	AI																				●																														
Space Temperature	AI						●											●												●	●																				
Space Humidity	AI						●																		●																										SEE FLOOR PLANS
Re-heat Valve	AO								●												●																														SEE SCHEDULE
Air Valve	AO								●																																										
Occupancy sensor(s)	BI											●																																							
TERMINAL UNIT (RETURN)																																																		
Airflow (cfm)	AI																				●																														
Space Pressure	AI						●					●							●											●	●																				
Air Valve	AO								●																																										
EXHAUST FAN (EF-52)																																																		
Exhaust Fan Speed	AO							●																																											
Duct Static Pressure	AI						●					●	●						●				●																				●							●	
Exhaust Fan Start/Stop	BO				●													●																																	
Exhaust Fan Status	BI										●																																							●	
VFD Alarm/Status	BI										●	●																																							
HEAT RECOVERY LOOP (EF-52 : XAC-11)																																																		
Exhaust Air Temperature(EF-3)	AI							●										●																																●	
Exhaust Air Humidity (EF-3)	AI																								●																									●	
EA Recovery Coil LAT	AI																	●																																●	
Exhaust Air Filter Status	BI										●								●											●																					

BID DOCUMENTS

Revisions:	Date
A4 AMENDMENT A00004	06/06/16

CONSULTANTS:

ARCHITECT/ENGINEERS:

FoxArchitects
One Memorial Drive
Suite 1800
Saint Louis, MO 63102
Tel 314.621.4343
Fax 314.621.0261

Veteran Owned Small Business VOSB CVE

SSC
Swim, Schuchat, & Cornett Engineering, Inc.
18207 Edison Avenue
Chesterfield, Missouri 63005
Phone: 636.530.7770 Fax: 636.530.7877
Missouri Certificate of Authority #NC 001244

Drawing Title
MECHANICAL CONTROL DIAGRAMS AND POINT LISTS

Approved: Associate Director | Approved: Chief Engineer
Approved: Chief of Staff | Approved: Safety Officer
Approved: Infection Control | Approved: Chief, Police & Security

Project Title
Phase 3: Renovation of Operating Rooms, ER & Triage

Location V.A.M.C. ST. LOUIS, MO
JOHN COCHRAN DIVISION

Date 02/24/16 | Checked SSC | Drawn Author

Project Number 657-13-300JC

Building Number 01

Drawing Number 1-3-M-504

Veterans Health Administration

Department of Veterans Affairs