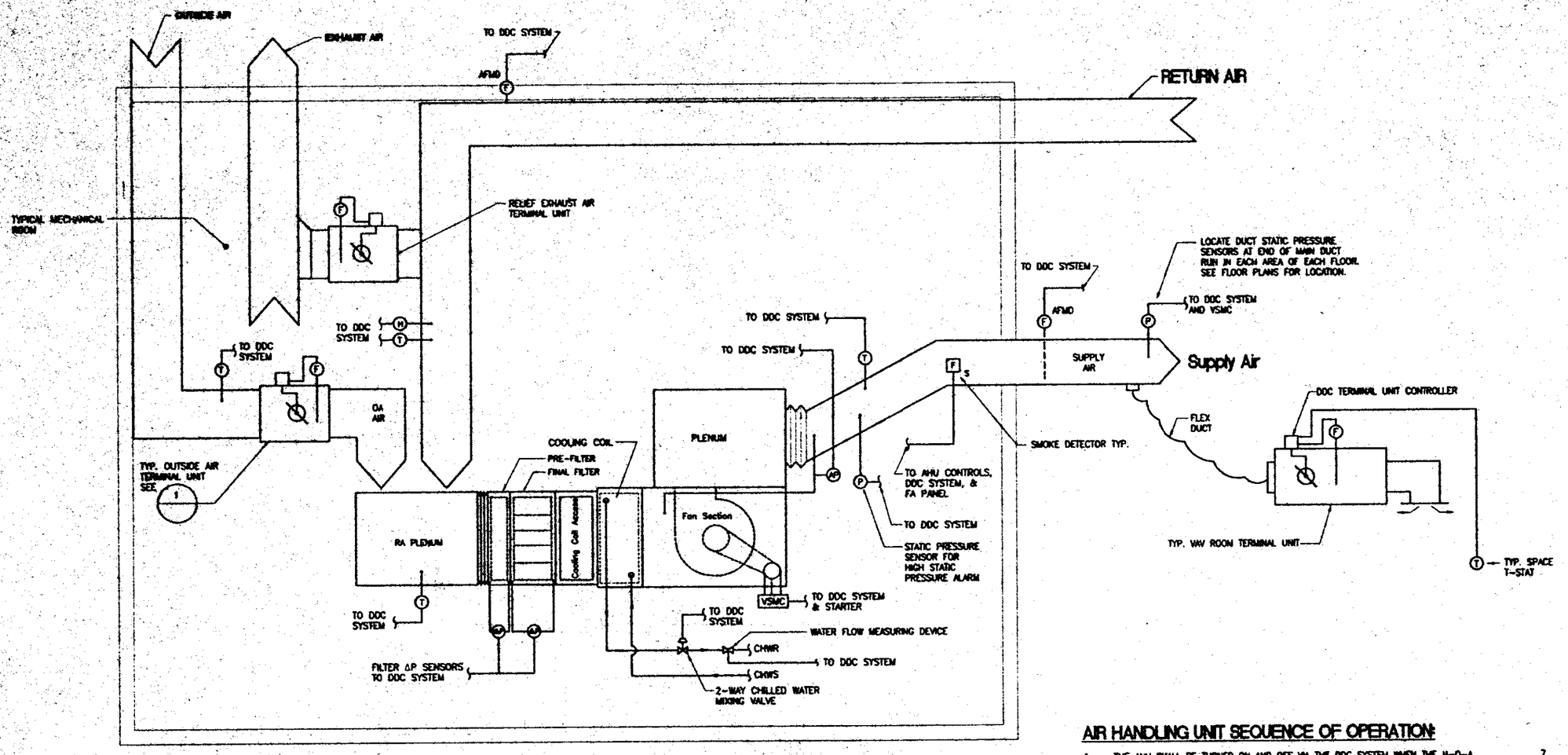
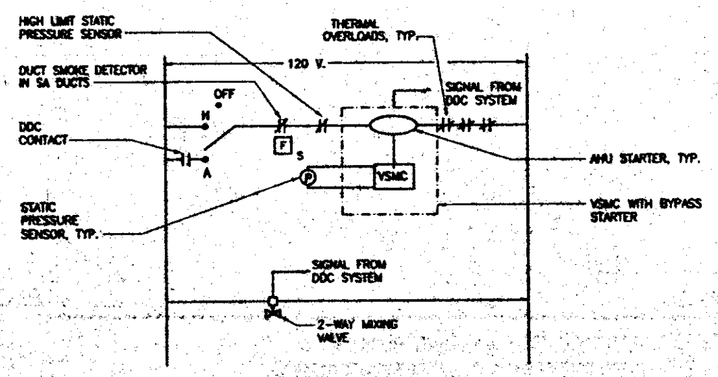


1 H9.3 TYPICAL VAV AIR HANDLING UNIT WITHOUT RETURN FAN SCHEMATIC DIAGRAM

NOT TO SCALE (30-AHU-1)



2 H9.3 TYPICAL AIR HANDLING UNIT CONTROL DIAGRAM

NOT TO SCALE

AIR HANDLING UNIT SEQUENCE OF OPERATION:

1. THE AHU SHALL BE TURNED ON AND OFF VIA THE DDC SYSTEM WHEN THE H-O-A SWITCH IS PLACED IN THE "AUTO" MODE. THE UNIT SHALL ALSO BE OPERATED MANUALLY WHEN THE H-O-A SWITCH IS PLACED IN THE "HAND" MODE. ALL AIR HANDLERS AND THEIR CORRESPONDING TERMINAL UNITS SHALL OPERATE ON THE TIME SCHEDULE PROGRAMMED INTO THE DDC SYSTEM.
2. THE AIR HANDLER SHALL BE PROGRAM TO OPERATE 16 HOURS PER DAY FROM 6:00 AM TO 10:00 PM.
3. AT START-UP, THE DDC SYSTEM SHALL OPEN THE CHILLED WATER FLOW CONTROL VALVE TO ALLOW FLOW THROUGH THE AHU COOLING COIL. THE VSMC SHALL BE PROGRAMMED TO SOFT START THE AHU MOTOR AT START-UP TO PREVENT OVER-PRESSURIZATION OF THE DUCTWORK.
4. THE CHILLED WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN THE ROOM SUPPLY AIR TEMPERATURE AT 55°F.
5. THE AIR DAMPER IN EACH ZONE TERMINAL UNIT SHALL MODULATE TO MAINTAIN THE ZONE SPACE TEMPERATURE AT SETPOINT. THE PRESSURE IN THE SUPPLY DUCT SHALL BE MEASURED BY THE STATIC PRESSURE SENSOR (SEE FLOOR PLANS FOR LOCATION) AND THE SIGNAL RELAYED TO THE VARIABLE FREQUENCY DRIVE PANEL. THE PANEL SHALL ADJUST THE FREQUENCY OF THE POWER SUPPLIED TO THE AHU MOTOR TO INCREASE OR DECREASE ITS SPEED TO MAINTAIN THE DUCT STATIC PRESSURE AT 0.75" SP. THE REQUIRED SETPOINT SHALL BE ADJUSTED AFTER RECEIVING INPUT FROM THE BALANCING CONTRACTOR.
6. THE SUPPLY AIR SETPOINT SIGNAL FROM THE DDC SYSTEM TO EACH AIR HANDLER SHALL BE RESET BASED ON EVALUATION OF THE FOLLOWING PARAMETERS: 1) THE DAMPER POSITION IN THE MOST OPEN DDC TERMINAL UNIT, 2) THE RETURN AIR HUMIDITY, AND 3) THE REHEAT STATUS OF EACH DDC VAV TERMINAL UNIT WITH REHEAT. IF ANY BOX IS IN ITS MAXIMUM OPEN POSITION, THE ROOM SUPPLY AIR SETPOINT SHALL BE 55°F. IF NONE OF THE BOXES ARE IN THEIR MAXIMUM OPEN POSITION, AND THERE IS A CALL FOR REHEAT AT ANY OF THE DDC VAV TERMINAL UNITS, THE DDC SYSTEM SHALL INCREASE THE SUPPLY AIR TEMPERATURE 1°F EVERY 30 MINUTES UP TO A MAXIMUM OF 60°F AS LONG AS THE RETURN AIR HUMIDITY IS BELOW 55% UNTIL THE MOST OPEN BOX IS AT ITS FULL OPEN POSITION, AND THE ROOM SPACE TEMPERATURE IS STILL MAINTAINED AT SETPOINT. IF THE RETURN AIR HUMIDITY RISES ABOVE 55%, THE SUPPLY AIR SETPOINT SHALL BE RESET BACK DOWN 1°F EVERY 30 MINUTES UNTIL THE HUMIDITY IS KEPT UNDER CONTROL. THE SUPPLY AIR TEMPERATURE SHALL ALSO BE RESET DOWNWARDS 1°F EVERY 30 MINUTES IF THE TERMINAL UNITS ARE NOT ABLE TO MAINTAIN THE SPACE TEMPERATURE IN EACH ZONE AT SETPOINT WITH THE DAMPERS IN THEIR FULL OPEN POSITION.
7. A HIGH LIMIT STATIC PRESSURE SENSOR SHALL BE INSTALLED ON THE DISCHARGE DUCTWORK. THE HIGH LIMIT STATIC PRESSURE SENSOR SHALL SHUT DOWN THE UNIT & SOUND AN ALARM IF THE SENSOR MEASURES A STATIC PRESSURE OF 3" OR MORE.
8. THE DDC SYSTEM SHALL ALSO MONITOR AND ALARM THE FOLLOWING POINTS FOR EACH AIR HANDLING UNIT:
   - A. DUCT SMOKE DETECTOR ALARM
   - B. AIR HANDLER FAILURE ALARM
   - C. PRE FILTER HIGH DIFFERENTIAL PRESSURE ALARM
   - D. AFTER FILTER HIGH DIFFERENTIAL PRESSURE ALARM
   - E. SUPPLY AIR TEMPERATURE AND FLOW
   - F. RETURN AIR TEMPERATURE, HUMIDITY, AND FLOW. (RA FLOW SHALL BE BASED ON 'SA-OA=RA')
   - G. OUTSIDE AIR TEMPERATURE & FLOW. (OA FLOW SHALL BE ASSUMED TO BE THE DEFAULT VALUE)
   - H. MIXED AIR TEMPERATURE
   - I. CHILLED WATER SUPPLY AND RETURN TEMPERATURES
   - J. AIR HANDLER ON/OFF STATUS
   - K. HIGH STATIC PRESSURE
   - L. OPERATIONAL STATIC PRESSURE
   - M. SMOKE/FIRE DAMPERS
9. THE OUTSIDE AIR TERMINAL UNIT FOR EACH AIR HANDLER SHALL MODULATE ITS DAMPER POSITION TO MAINTAIN THE DESIGN OUTSIDE AIR FLOW TO THE AIR HANDLER INDEPENDENT OF THE PRESSURE CHANGES IN THE SYSTEM.
10. THE EXHAUST AIR TERMINAL UNIT FOR EACH AIR HANDLER SHALL MODULATE ITS DAMPER POSITION TO MAINTAIN THE DESIGN RELIEF EXHAUST AIR FLOW FROM THE RETURN AIR DUCT INDEPENDENT OF THE PRESSURE CHANGES IN THE SYSTEM.
11. UPON ACTIVATION OF THE DUCT SMOKE DETECTOR, THE AHU SHALL SHUT DOWN, THE SMOKE DAMPERS SHALL CLOSE, AND A SIGNAL SHALL BE RELAYED TO THE FIRE ALARM SYSTEM.

ARCHITECTS HAWAII LIMITED
1001 Bishop Street, Pacific 300
Honolulu, Hawaii 96813
Telephone: (808) 523-1636
FAX: (808) 521-3290

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ERIC J. TOM LICENSED PROFESSIONAL ENGINEER No. 9889-E HAWAII, U.S.A.

Drawing Title: AHU CONTROL DIAGRAM AND SEQUENCE OF OPERATION

Project Title: AMBULATORY CARE AND [illegible] PHASE I AMBULATORY CARE CLINIC

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