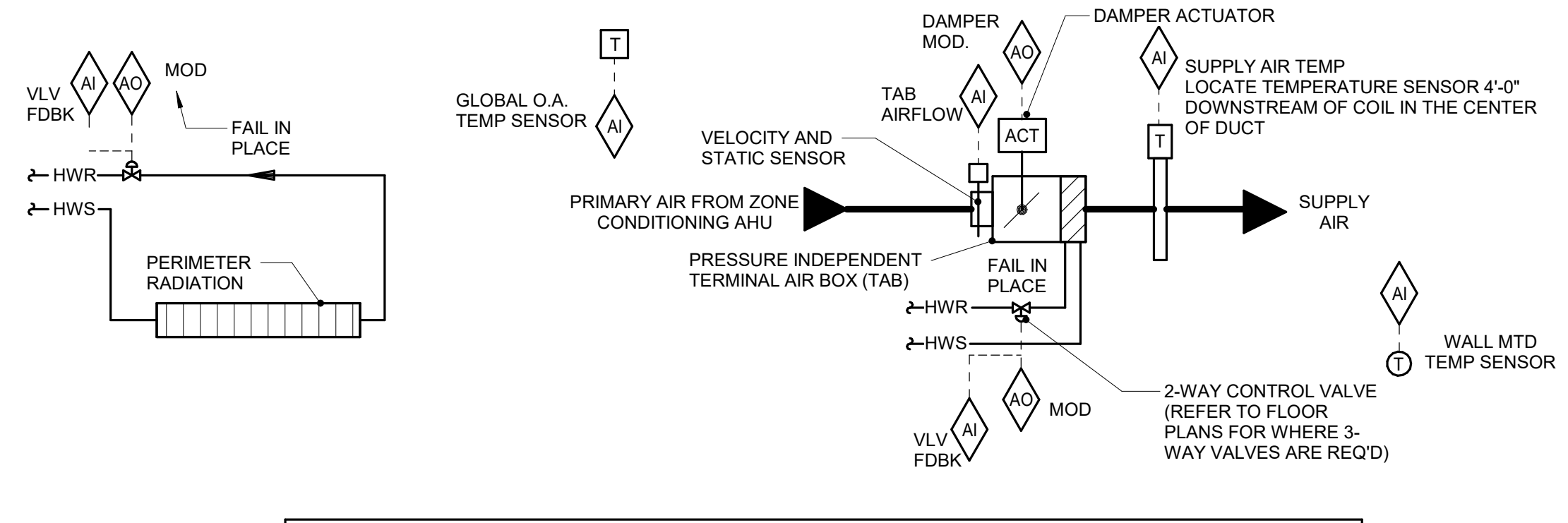


SEQUENCE OF OPERATION:

- BAS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER AND TAB HW REHEAT COIL CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 5°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.
- UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, THE REHEAT COIL CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE SETPOINT UNTIL THE SUPPLY AIR TEMPERATURE IS 20°F (ADJ.) ABOVE ROOM TEMPERATURE SETPOINT.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, TAB SHALL OPEN TO MAINTAIN SETPOINT UNTIL TAB AIRFLOW REACHES ITS MAXIMUM HEATING SETTING. THE REHEAT CONTROL VALVE SHALL CONTINUE TO MODULATE OPEN TO MAINTAIN MAXIMUM DELTA T LISTED ABOVE.
- THE BAS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM TO THE BAS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.



SEQUENCE OF OPERATION:

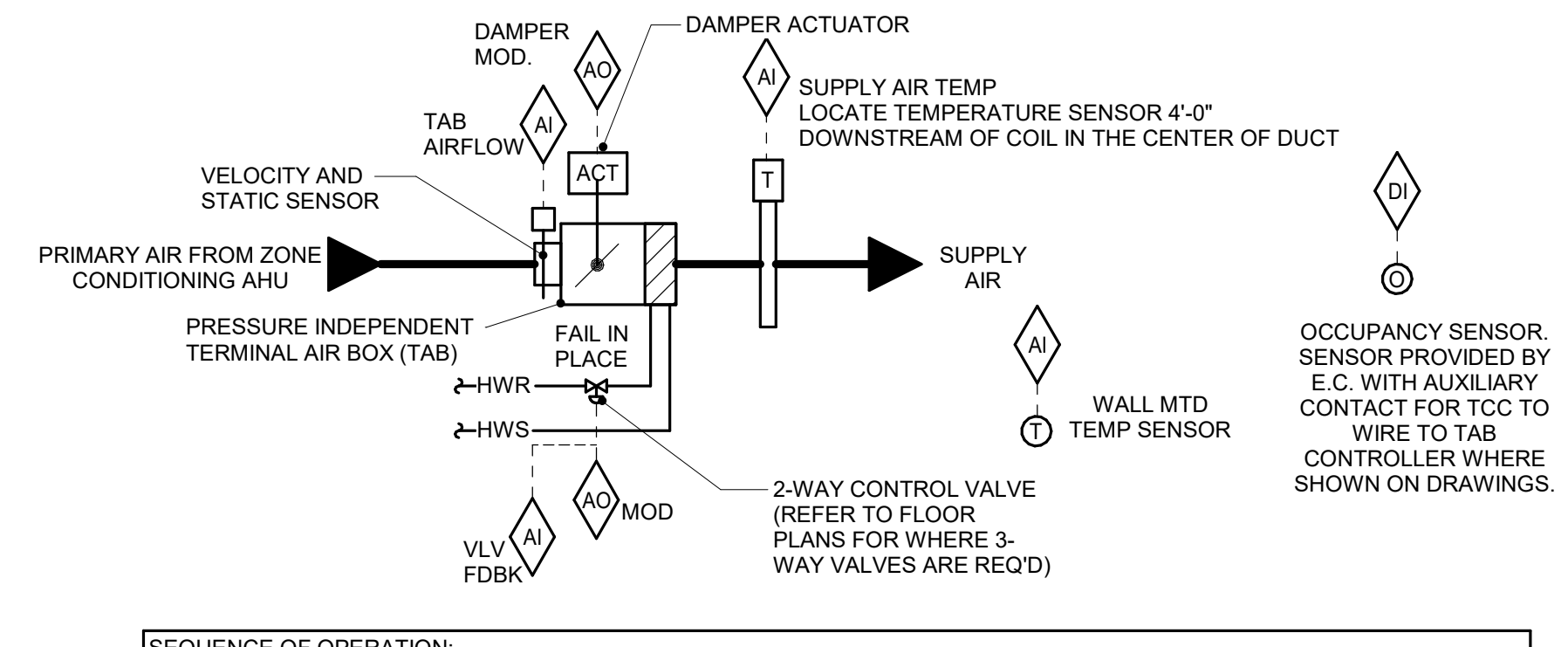
- BAS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER, TAB HEATING WATER REHEAT COIL, AND PERIMETER RADIATION CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 5°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION. THE REHEAT COIL CONTROL VALVE AND PERIMETER RADIATION CONTROL VALVE SHALL BE CLOSED.
- UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE. THE REHEAT COIL CONTROL VALVE AND PERIMETER RADIATION CONTROL VALVE SHALL BE CLOSED.
- THE TAB CONTROLLER SHALL ENABLE PERIMETER RADIATION CONTROLS WHEN THE O.A. TEMP DROPS BELOW 35°F (ADJ.). WHEN THE O.A. TEMP RISES ABOVE 40°F (ADJ.) PERIMETER RADIATION CONTROLS SHALL BE DISABLED.
- AS SPACE TEMP DROPS BELOW SETPOINT AND TAB DAMPER IS AT MINIMUM SCHEDULED CFM, TAB CONTROLLER SHALL MODULATE THE PERIMETER RADIATION CONTROL VALVE OPEN AS REQUIRED TO MAINTAIN SPACE TEMP.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, THE REHEAT COIL CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE SETPOINT UNTIL THE SUPPLY AIR TEMPERATURE IS 20°F (ADJ.) ABOVE ROOM TEMPERATURE SETPOINT.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, TAB SHALL OPEN TO MAINTAIN SETPOINT UNTIL TAB AIRFLOW REACHES ITS MAXIMUM HEATING SETTING. THE REHEAT CONTROL VALVE SHALL CONTINUE TO MODULATE OPEN TO MAINTAIN MAXIMUM DELTA T LISTED ABOVE.
- THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM TO THE BAS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT.

TAB CONTROL W/ HOT WATER REHEAT AND PERIMETER RADIATION - TAB-D

12" = 1'-0"



SEQUENCE OF OPERATION:

OCCUPIED CONTROL:

- BAS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER AND TAB HW REHEAT COIL CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 5°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.
- UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, THE REHEAT COIL CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE SETPOINT UNTIL THE SUPPLY AIR TEMPERATURE IS 20°F (ADJ.) ABOVE ROOM TEMPERATURE SETPOINT.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, TAB SHALL OPEN TO MAINTAIN SETPOINT UNTIL TAB AIRFLOW REACHES ITS MAXIMUM HEATING SETTING. THE REHEAT CONTROL VALVE SHALL CONTINUE TO MODULATE OPEN TO MAINTAIN MAXIMUM DELTA T LISTED ABOVE.
- THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

UNOCCUPIED CONTROL:

- FMCS TAB CONTROL SHALL FOLLOW OCCUPIED CONTROL WITH THE FOLLOWING EXCEPTIONS.
- FMCS TAB CONTROLLER SHALL MAINTAIN AN UNOCCUPIED DEADBAND OF 15°F (ADJ.) FROM THE SPACE TEMPERATURE SETPOINT AFTER A 30 MIN. (ADJ.) TIME DELAY ONCE SPACE GOES INTO UNOCCUPIED MODE AS DETERMINED BY THE OCCUPANCY SENSOR.
- THE TAB MINIMUM CFM SHALL BE RESET TO 0 CFM WHEN IN UNOCCUPIED MODE.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM TO THE BAS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT.

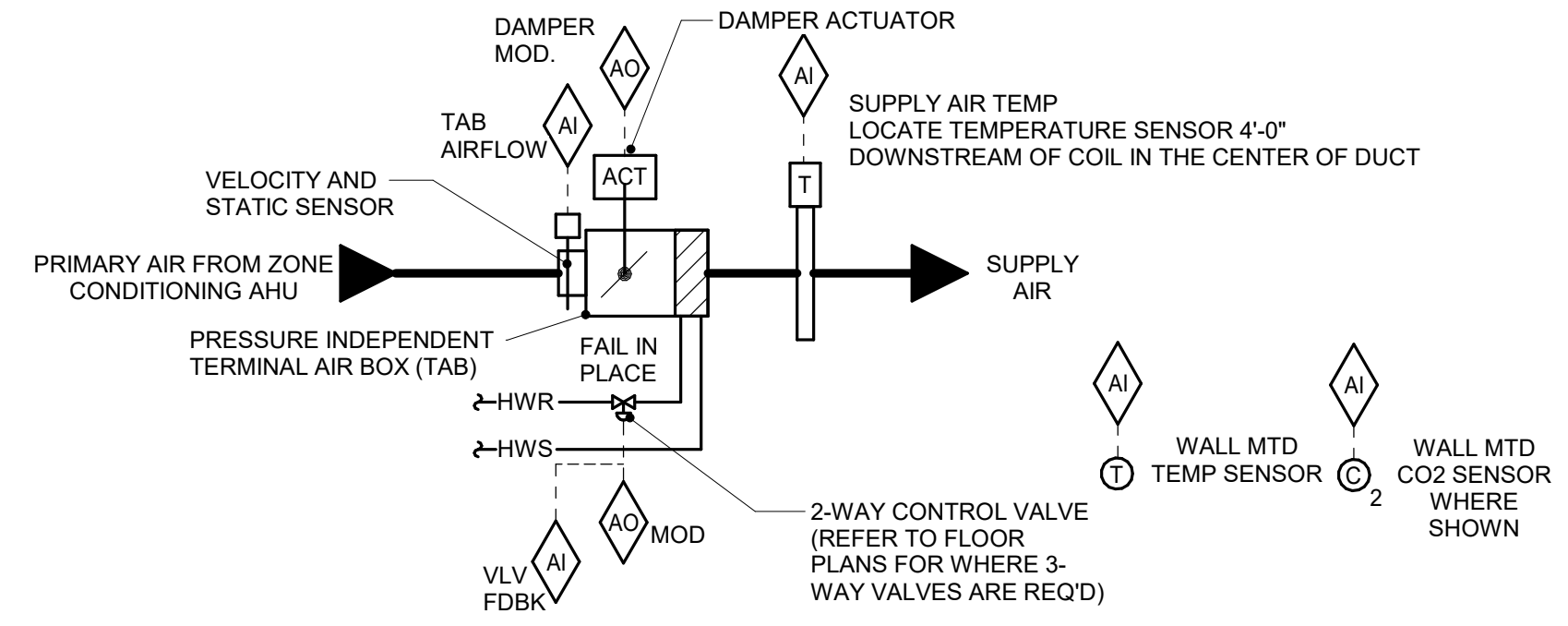
TAB CONTROL W/ HOT WATER REHEAT AND OCCUPANCY CONTROL - TAB-B

NO SCALE

1 TAB CONTROL W/ HOT WATER REHEAT - TAB-A

NO SCALE

2



SEQUENCE OF OPERATION:

- BAS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER AND TAB HW REHEAT COIL CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 5°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.
- UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, THE REHEAT COIL CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE SETPOINT UNTIL THE SUPPLY AIR TEMPERATURE IS 20°F (ADJ.) ABOVE ROOM TEMPERATURE SETPOINT.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, TAB SHALL OPEN TO MAINTAIN SETPOINT UNTIL TAB AIRFLOW REACHES ITS MAXIMUM HEATING SETTING. THE REHEAT CONTROL VALVE SHALL CONTINUE TO MODULATE OPEN TO MAINTAIN MAXIMUM DELTA T LISTED ABOVE.
- THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

CO2 SENSOR-BASED DEMAND CONTROL VENTILATION:

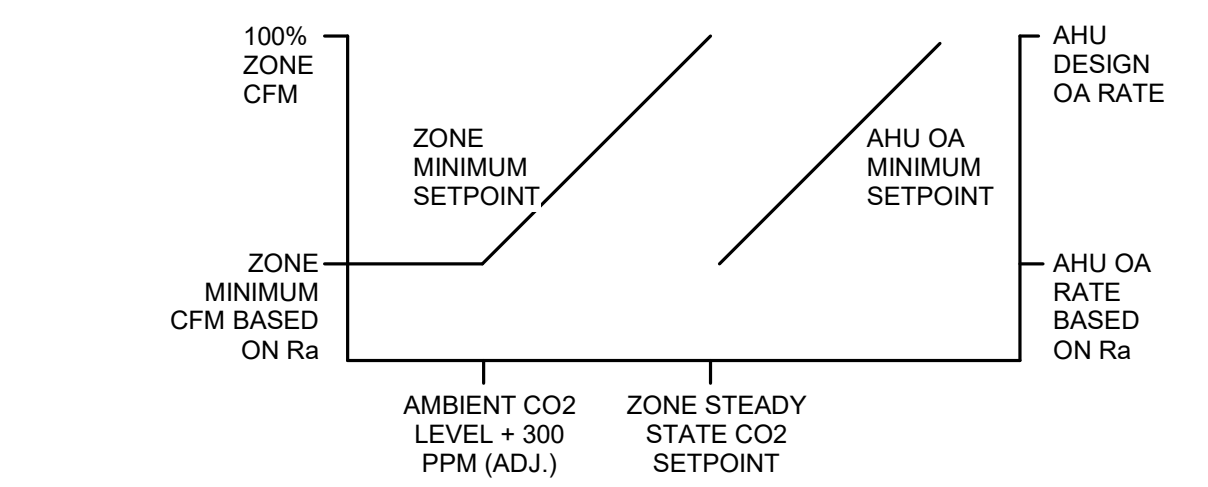
DURING OCCUPIED HOURS, THE BAS SHALL RESET THE ZONE MINIMUM AIRFLOW SETTING BASED ON THE ZONE CO2 SENSOR INPUT SIGNAL:

- WHEN THE ZONE CO2 SENSOR READS AMBIENT CO2 LEVEL PPM (ADJ.) PLUS 300 PPM (ADJ.) OR LESS, THE TAB MINIMUM AIRFLOW SETTING SHALL BE EQUAL TO THE MINIMUM SPECIFIED IN THE TAB SCHEDULE.
- WHEN THE ZONE CO2 SENSOR IS AT THE CO2 SETPOINT IN THE TAB SCHEDULE OR HIGHER, THE TAB MINIMUM AIRFLOW SETTING SHALL BE EQUAL TO THE TAB MAXIMUM AIRFLOW SETTING SPECIFIED IN THE TAB SCHEDULE.
- WHEN THE ZONE CO2 LEVEL IS BETWEEN AMBIENT CO2 LEVEL PPM + 300 PPM (ADJ.) AND THE ZONE CO2 SETPOINT, THE TAB MINIMUM AIRFLOW SHALL VARY PROPORTIONALLY BETWEEN THE SCHEDULED TAB MINIMUM AIRFLOW AND MAXIMUM AIRFLOW.

ALARMS, INTERLOCKS & SAFETIES:

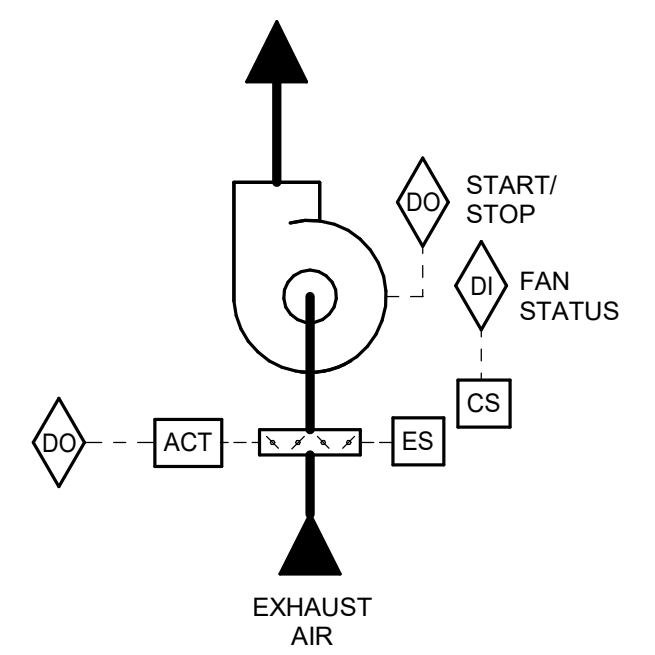
SEND AN ALARM TO THE BAS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.

SEND AN ALARM TO THE BAS OPERATOR INTERFACE IF THE SPACE CO2 CONCENTRATION IS ABOVE THE SCHEDULED SETPOINT FOR MORE THAN 60 MINUTES (ADJ.)



4 TAB CONTROL W/ HOT WATER REHEAT AND CO2-BASED DEMAND CONTROL VENTILATION - TAB-C

NO SCALE



SEQUENCE OF OPERATION:

EXHAUST FAN SHALL BE ENABLED BY THE BAS.

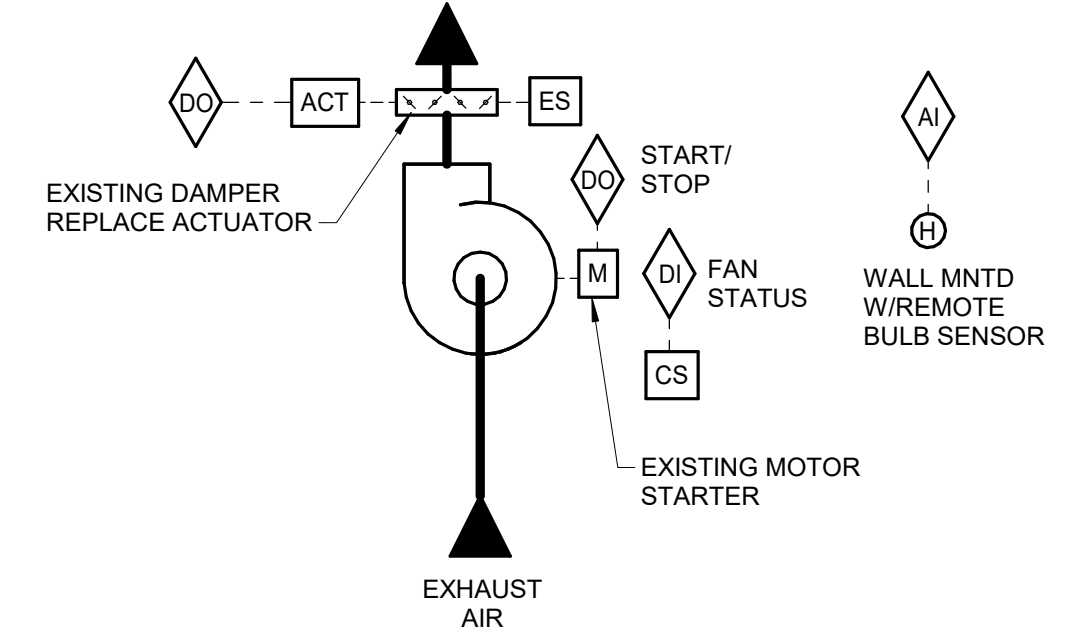
2-POSITION DAMPER SHALL FULLY OPEN WHEN FAN IS ENABLED. ONCE PROVEN OPEN BY THE END SWITCH THE FAN SHALL START. WHEN FAN IS DISABLED, 2-POSITION DAMPER SHALL FULLY CLOSE AFTER A 30 SECOND (ADJ.) THE DELAY

ALARMS, INTERLOCKS AND SAFETIES:

AN ALARM SHALL BE GENERATED AT THE BAS OPERATOR WORKSTATION IN THE EVENT THE FMCS COMMANDS THE EXHAUST FAN TO OPERATE AND THE CURRENT SENSING RELAY DETECTS INSUFFICIENT CURRENT DRAW.

5 GENERAL EXHAUST FAN CONTROL - FAN-A

NO SCALE



SEQUENCE OF OPERATION:

EXHAUST FAN SHALL BE ENABLED BY THE BAS. THE EXHAUST FAN SHALL START WHEN THE CRAWLSPACE RELATIVE HUMIDITY EXCEEDS 60% (ADJ.). FAN SHALL SHUT DOWN WHEN THE SPACE RH IS BELOW 60% (ADJ.).

2-POSITION DAMPER SHALL FULLY OPEN WHEN FAN IS STARTED. ONCE PROVEN OPEN BY THE END SWITCH THE FAN SHALL START. WHEN FAN IS DISABLED, 2-POSITION DAMPER SHALL FULLY CLOSE AFTER A 30 SECOND (ADJ.) THE DELAY

ALARMS, INTERLOCKS AND SAFETIES:

AN ALARM SHALL BE GENERATED AT THE BAS OPERATOR WORKSTATION IN THE EVENT THE BAS COMMANDS THE EXHAUST FAN TO OPERATE AND THE CURRENT SENSING RELAY DETECTS INSUFFICIENT CURRENT DRAW.

6 EXISTING CRAWL SPACE EXHAUST FAN CONTROL - FAN-B

NO SCALE

A/E FIRMS PRIME/ARCH: STRATA ARCHITECTURE 1703 OAK STREET, SUITE 100 KANSAS CITY, MO T: 816.474.0900	DESIGNED: CADD: TECH. REVIEW: DATE: 10.27.2023	SUB SHEET NO. 01 ME8.4	TITLE OF SHEET MAURICE BATHHOUSE TEMPERATURE CONTROLS REHABILITATE BATHHOUSES HOT SPRINGS NATIONAL PARK	DRAWING NO. 626 180065 PMIS/PKG NO. 318674 SHEET 163 OF 286
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