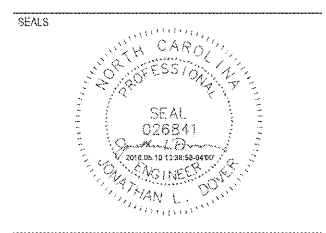


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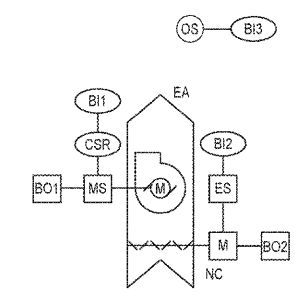


SUBMITTAL  
 4 MAY 2018  
**CONSTRUCTION DOCUMENTS**

REVISIONS

NO.	DATE	DESCRIPTION

SHEET  
**CONTROLS**  
**M-803**  
 DESIGN: JLD  
 DRAWN: DRF  
 REVIEW: EES  
 CN 5938



DDC POINTS LIST					
INPUT					
POINT #	POINT DESCRIPTION	TREND	ALARM	GRAPHIC	
ANALOG					
BINARY					
BI1	EXHAUST FAN STATUS				X
BI2	EXHAUST DAMPER POSITION				X
BI3	OCCUPANCY STATUS				X
OUTPUT					
POINT #	POINT DESCRIPTION	TREND	ALARM	GRAPHIC	
ANALOG					
BINARY					
BO1	EXHAUST FAN START / STOP				
BO2	EXHAUST DAMPER OPEN / CLOSE				

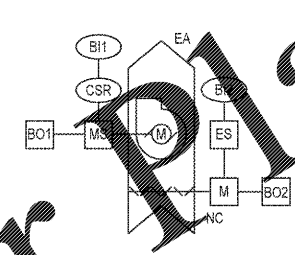
**SEQUENCE OF OPERATION**

THE EXHAUST FAN SHALL BE CONTROLLED BY THE BUILDING DDC SYSTEM. THE FAN SHALL OPERATE BASED ON ROOM OCCUPANCY SENSOR STATUS. WHENEVER THE ROOM OCCUPANCY SENSOR INDICATES THAT THE ROOM IS OCCUPIED, THE EXHAUST DAMPER SHALL OPEN. AFTER PROVING OPEN, THE EXHAUST FAN SHALL START AND SHALL RUN CONTINUOUSLY. WHENEVER THE ROOM OCCUPANCY SENSOR INDICATES THAT THE ROOM HAS BEEN UNOCCUPIED FOR TEN MINUTES (ADJ), THE EXHAUST FAN SHALL STOP AND THE EXHAUST DAMPER SHALL CLOSE AFTER A 30 SECOND DELAY.

- PROVIDE THE FOLLOWING ALARMS TO THE DDC SYSTEM:
- EXHAUST FAN FAILURE: COMMANDED 'ON' BUT STATUS IS 'OFF'
  - EXHAUST FAN RUNNING IN HAND: COMMANDED 'OFF' BUT STATUS IS 'ON'
  - EXHAUST DAMPER FAILURE: COMMANDED 'OPEN' BUT STATUS IS 'CLOSED'
  - EXHAUST DAMPER IN HAND: COMMANDED 'CLOSE' BUT STATUS IS 'OPEN'

ALARMS SHALL REQUIRE MANUAL RESET.

**OCCUPANCY SENSOR CONTROLLED EXHAUST SYSTEM (EF-2 & EF-4)**  
 NO SCALE



DDC POINTS LIST					
INPUT					
POINT #	POINT DESCRIPTION	TREND	ALARM	GRAPHIC	
ANALOG					
BINARY					
BI1	EXHAUST FAN STATUS				X
BI2	EXHAUST DAMPER POSITION				X
BI3	INTAKE DAMPER POSITION				X
OUTPUT					
POINT #	POINT DESCRIPTION	TREND	ALARM	GRAPHIC	
ANALOG					
BINARY					
BO1	EXHAUST FAN START / STOP				
BO2	EXHAUST DAMPER OPEN / CLOSE				

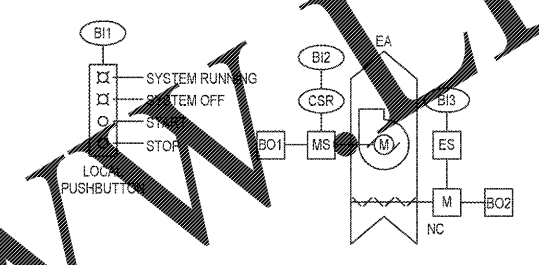
**SEQUENCE OF OPERATION**

THE EXHAUST FAN SHALL BE CONTROLLED BY THE BUILDING DDC SYSTEM. EF-1 SHALL RUN WHENEVER RTU-1 IS IN THE OCCUPIED MODE. EF-5 SHALL RUN WHENEVER RTU-2 IS IN THE OCCUPIED MODE. WHEN ENERGIZED TO RUN, THE EXHAUST DAMPER SHALL OPEN. AFTER PROVING OPEN, THE EXHAUST FAN SHALL START AND SHALL RUN CONTINUOUSLY. WHEN COMMANDED TO STOP, THE EXHAUST FAN SHALL STOP AND THE EXHAUST DAMPER SHALL CLOSE AFTER A 30 SECOND DELAY.

- PROVIDE THE FOLLOWING ALARMS TO THE DDC SYSTEM:
- EXHAUST FAN FAILURE: COMMANDED 'ON' BUT STATUS IS 'OFF'
  - EXHAUST FAN RUNNING IN HAND: COMMANDED 'OFF' BUT STATUS IS 'ON'
  - EXHAUST DAMPER FAILURE: COMMANDED 'OPEN' BUT STATUS IS 'CLOSED'
  - EXHAUST DAMPER IN HAND: COMMANDED 'CLOSE' BUT STATUS IS 'OPEN'

ALARMS SHALL REQUIRE MANUAL RESET.

**GENERAL EXHAUST SYSTEM (EF-1 & EF-5)**  
 NO SCALE



DDC POINTS LIST					
INPUT					
POINT #	POINT DESCRIPTION	TREND	ALARM	GRAPHIC	
ANALOG					
BINARY					
BI1	SYSTEM START / STOP				
BI2	EXHAUST FAN STATUS				X
BI3	EXHAUST DAMPER POSITION				X
OUTPUT					
POINT #	POINT DESCRIPTION	TREND	ALARM	GRAPHIC	
ANALOG					
BINARY					
BO1	EXHAUST FAN START / STOP				
BO2	EXHAUST DAMPER OPEN / CLOSE				

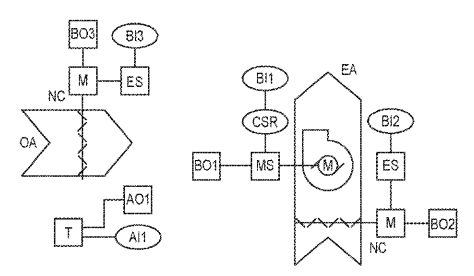
**SEQUENCE OF OPERATION**

THE EXHAUST FAN SHALL BE CONTROLLED BY THE BUILDING DDC SYSTEM THROUGH A LOCAL PUSHBUTTON. PUSHBUTTON SHALL CONSIST OF INDIVIDUAL PUSHBUTTONS TO START AND STOP THE SYSTEM. EACH BUTTON SHALL BE LABELED 'START' OR 'STOP' ACCORDINGLY. ADDITIONALLY, THE PUSHBUTTON SHALL INCLUDE RED AND GREEN STATUS LIGHTS LABELED 'SYSTEM OFF' AND 'SYSTEM RUNNING' RESPECTIVELY. WHEN THE 'START' BUTTON IS DEPRESSED, THE EXHAUST DAMPER SHALL OPEN, AFTER PROVING OPEN, THE EXHAUST FAN SHALL START AND SHALL RUN CONTINUOUSLY. THE GREEN 'SYSTEM RUNNING' LIGHT SHALL BE ILLUMINATED AND THE RED LIGHT SHALL BE EXTINGUISHED. WHEN THE 'STOP' BUTTON IS DEPRESSED, THE EXHAUST FAN SHALL STOP AND THE EXHAUST DAMPER SHALL CLOSE AFTER A 30 SECOND DELAY. THE GREEN 'SYSTEM RUNNING' LIGHT SHALL BE EXTINGUISHED AND THE RED 'SYSTEM OFF' LIGHT SHALL BE ILLUMINATED.

- PROVIDE THE FOLLOWING ALARMS TO THE DDC SYSTEM:
- EXHAUST FAN FAILURE: COMMANDED 'ON' BUT STATUS IS 'OFF'
  - EXHAUST FAN RUNNING IN HAND: COMMANDED 'OFF' BUT STATUS IS 'ON'
  - EXHAUST DAMPER FAILURE: COMMANDED 'OPEN' BUT STATUS IS 'CLOSED'
  - EXHAUST DAMPER IN HAND: COMMANDED 'CLOSE' BUT STATUS IS 'OPEN'

ALARMS SHALL REQUIRE MANUAL RESET.

**PUSHBUTTON CONTROLLED EXHAUST SYSTEM (EF-3)**  
 NO SCALE



DDC POINTS LIST					
INPUT					
POINT #	POINT DESCRIPTION	TREND	ALARM	GRAPHIC	
ANALOG					
BINARY					
BI1	EXHAUST FAN STATUS				X
BI2	EXHAUST DAMPER POSITION				X
BI3	INTAKE DAMPER POSITION				X
OUTPUT					
POINT #	POINT DESCRIPTION	TREND	ALARM	GRAPHIC	
ANALOG					
BINARY					
BO1	EXHAUST FAN START / STOP				
BO2	EXHAUST DAMPER OPEN / CLOSE				
BO3	INTAKE DAMPER OPEN / CLOSE				

**SEQUENCE OF OPERATION**

THE EXHAUST SYSTEM SHALL BE CONTROLLED BY THE BUILDING DDC SYSTEM. UPON A RISE IN SPACE TEMPERATURE ABOVE SETPOINT (85°F ADJ), THE INTAKE DAMPER AND EXHAUST DAMPER SHALL OPEN. AFTER PROVING OPEN, THE EXHAUST FAN SHALL START AND RUN CONTINUOUSLY. UPON A FALL IN SPACE TEMPERATURE BELOW 80°F (ADJ), THE REVERSE SHALL OCCUR.

- PROVIDE THE FOLLOWING ALARMS TO THE DDC SYSTEM:
- HIGH SPACE TEMPERATURE: SPACE TEMPERATURE GREATER THAN 105°F (ADJ)
  - EXHAUST FAN FAILURE: COMMANDED 'ON' BUT STATUS IS 'OFF'
  - DAMPER FAILURE: COMMANDED 'OPEN' BUT STATUS IS 'CLOSED' (TYPICAL FOR INTAKE AND EXHAUST DAMPERS)
  - EXHAUST FAN RUNNING IN HAND: COMMANDED 'OFF' BUT STATUS IS 'ON'
  - DAMPER IN HAND: COMMANDED 'CLOSE' BUT STATUS IS 'OPEN' (TYPICAL FOR INTAKE AND EXHAUST DAMPERS)

ALARMS SHALL REQUIRE MANUAL RESET.

**THERMOSTATICALLY CONTROLLED EXHAUST SYSTEM (EF-6 & EF-7)**  
 NO SCALE