

**Part 1 General**

**1.1 PURPOSE**

- .1 Control sequences are intended to relay the general intent of how mechanical systems are to operate. They are not intended to give direct instruction in the construction or programming of the system.
- .2 Each control sequence to be custom programmed for its intended function. Provide documentation of control sequence logic used herein.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 GENERAL**

- .1 Contractor shall provide full EMCS control of all mechanical components affected by the replacement and addition of new air handling units to the building, and other areas of renovation as shown on drawings or indicated in the specifications.
- .2 All noted set points to be adjustable through EMCS.
- .3 Sequencing for existing systems shall not be changed from current design. New installations shall allow existing sequencing, operation, scheduling and alarms to remain. Revise BMS as required to satisfy this requirement.

**3.2 SEQUENCES**

- .1 Smudging Rooms
  - .1 Systems configured as follows:
    - .1 Exhaust fan EF-1:
      - .1 Duct distribution in rooms B05, B06, and B08.
    - .2 Exhaust fan EF-2:
      - .1 Duct distribution in room B05.
    - .3 Air Handling Unit RTU-29:
      - .1 Outdoor air intake



- .2 Mixing section
  - .3 Supply fan
  - .4 Indirect heating section
  - .5 Supply air duct distribution
- .2 Scheduling
  - .1 No schedule.
- .3 Operation
  - .1 Timed wall switch activated (Smudging Operation).
    - .1 EF-1 runs continuously. Override occupancy sensor.
    - .2 MD-2 fully opens, proven by end switch. EF-2 activated.
    - .3 RTU-29 r/a damper fully closes, o/a damper fully opens. RTU-29 supplies 800cfm of fresh air to space by modulating S/A damper. Recirculation dampers set to allow 400cfm of airflow.
    - .4 After 60 minutes, EF-2 is deactivated. MD-2 fully closes. Controls for RTU-29 and EF-1 revert to non-smudging operation sequencing.
  - .2 Non-Smudging Operation
    - .1 Occupancy sensor in Smudging Room activated. MD-1 opens, proven by end switch. EF-1 energizes. RTU-29 o/a damper modulates to allow 250cfm into unit. RTU-29 r/a damper modulates to allow 300cfm r/a into unit. S/A damper modulates to allow 550cfm into space. Recirculation dampers set at 650cfm.
    - .2 Occupancy sensor is deactivated, EF-1 is de-energized. MD-1 fully closes. RTU-29 o/a damper fully closes. RTU-29 operates as required to heat space with recirculated air.
  - .3 Differential pressure shall be measured.
- .4 Alarms
  - .1 Space temperature out of range.
  - .2 Supply air temperature out of range.
  - .3 Dirty filter.
  - .4 Fan failure.
- .2 Rooftop Unit RTU-16
  - .1 System configured as follows:
    - .1 Return fan
    - .2 Mixing section



- .3 Filter section
- .4 Supply fan
- .5 Hot deck – indirect fired heating
- .6 Cold deck – cooling coil (dx)
- .7 Mixing air valve
- .8 Supply air duct distribution
- .2 Scheduling
  - .1 Refer to operation.
- .3 Operation
  - .1 In response to call for heating or cooling from space thermostat, mixing air valve shall modulate supply air temperature for the space to satisfy need for heat/cooling.
  - .2 Hot deck temperature shall be determined by outdoor temperature reset. As outdoor ambient temperature decreases, hot deck temperature increases.
  - .3 Cold deck temperature shall be determined by outdoor temperature reset. As outdoor ambient temperature increases, cold deck temperature decreases. Compressors shall not operate below 14°C (57°F).
- .3 Rooftop Unit RTU-30
  - .1 System configured as follows:
    - .1 Return ducting
    - .2 Economizing section
    - .3 Filter section
    - .4 Heating section
    - .5 Cooling section (dx)
    - .6 Supply fan
    - .7 Supply air duct distribution
  - .2 Scheduling
    - .1 Unit shall operate during unoccupied times, when RTU-18 is deactivated.
  - .3 Operation
    - .1 RTU-18 and associated exhaust fan in kitchen are de-energized. RTU-30 is energized to provide heating as required to the space.
    - .2 On demand for cooling, follow standard economizer sequencing to provide air to space. Dx coil shall only be used if cooling demand cannot be met by economizer after 10 minutes.



**END OF SECTION 25 90 01**