|  |  |
| --- | --- |
| FT: | **23 38 13** |
| **ITEM:** | **Kitchen Exhaust/Make-up Air Unit** |
| **ID:** |  |
| **AREA SERVED:** |  |

Form Filled Out By:

|  |  |  |
| --- | --- | --- |
|  | **Name & Company** | **Date** |
| GC |  |  |
| MC |  |  |
| EC |  |  |
| BC |  |  |
| CC |  |  |
| OR |  |  |
| A/E |  |  |
| CA |  |  |

GC = General Contractor; MC = Mechanical Contractor; EC = Electrical Contractor; BC = Balancing Contractor; CC = Controls Contractor; OR = Owner Representative; A/E = Architect/Engineer; CA = Commissioning Agent

XX = No Initials Required

# TEST PREREQUISITES

The following items have been completed and the equipment is ready for Functional Testing.

Check if OK. Enter Outstanding Item Note number if deficient.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Item | **GC** | **MC** | **EC** | **BC** | **CC** | **OR** | **A/E** | **CA** |
| Unit startup completed | XX |  | XX | XX | XX |  |  |  |
| Start-up report submitted | XX |  | XX | XX | XX |  |  |  |
| Test and Balance (TAB) completed | XX |  | XX |  | XX |  |  |  |
| SOO programmed | XX |  | XX | XX |  |  |  |  |
| Prefuctional Checklist completed | XX |  | XX | XX | XX |  |  |  |

# SENSOR CALIBRATION VERIFICATIONS

* Check a representative sample of sensors for calibration and adequate location.
* Test the packaged controls and BAS readings.
* Use the same test instruments as used for the original calibration, if possible.
* Verify that the sensor reading (via the permanent thermostat, gage, packaged control panel or building automation system (BAS)) compared to the test instrument-measured value is within the tolerances specified in the contract requirements. (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_).
  + "In calibration" means making a reading with a calibrated test instrument within 6 inches of the site sensor.
  + For items out of calibration or adjustment, fix now if easy, via an offset in the BAS, calibration or replacement of sensor.

| **Sensor &**  **Location** | **Location OK1** | **1st Gage / Pkg**  **& BAS Value** | **Test Inst**  **Value** | **Final Gage / Pkg**  **& BAS Value** | **Pass**  **Y/N?** |
| --- | --- | --- | --- | --- | --- |
|  |  | Pkg:  BAS: |  | Pkg:  BAS: |  |
|  |  | Pkg:  BAS: |  | Pkg:  BAS: |  |
|  |  | Pkg:  BAS: |  | Pkg:  BAS: |  |
|  |  | Pkg:  BAS: |  | Pkg:  BAS: |  |
|  |  | Pkg:  BAS |  | Pkg:  BAS |  |

1Sensor location is appropriate and away from causes of erratic operation.

# DEVICE CALIBRATION VERIFICATIONS

* Check a representative sample of actuators and devices for calibration and adequate operation.
  + "In calibration" means observing a readout in the BAS and going to the actuator or controlled device and verifying that the BAS reading is correct.
  + For items out of calibration or adjustment, fix now if easy, via an offset in the BAS, or a mechanical fix.

| **Device / Actuator &**  **Location** | **Procedure** | **1st BAS**  **Value** | **Site**  **Observation** | **Final BAS**  **Value** | **Pass**  **Y/N?** |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

# FUNCTIONAL PERFORMANCE VERIFICATIONS

**Demonstrate operation of equipment per Contract Documents including the following:**

1. Record of All Values for Current Setpoints (SP), Control Parameters, Limits, Delays, Lockouts, Schedules, Etc. Changed to Accommodate Testing:

| **Parameter** | **Pre-Test Values** | **Returned to Pre-Test Values √** |
| --- | --- | --- |
| Space temperature setpoint |  |  |
| Supply air temperature setpoint |  |  |
| Supply air reset schedule |  |  |
| Discharge static pressure |  |  |
| Building static pressure |  |  |
| O.A. CFM |  |  |

1. The following testing requirements are in addition to and do not replace any testing requirements elsewhere in the Project Documents.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| The following is a step by step test to verify the system follows the design sequence of operation. The test procedure column indicates what adjustments are needed for testing. Each step is either pass or fail. | | | | |
| **Step** | **Test Procedure** |  |  | **Pass/Fail** |
| **Functional Test** | | | | |
| 1 | Power the unit off from the local disconnect switch. | | |  |
| 2 | Verify loss of status at RMCS and Alarms | | |  |
| 3 | Fan is off | | |  |
| 4 | Damper is closed | | |  |
| 5 | Restore power to the unit. | | |  |
| 6 | Damper is open | | |  |
| 7 | Fan is ON with the correct rotation | | |  |
| 8 | RMCS control is regained, alarms cleared, unit resumes operation in the scheduled mode of operation. | | |  |
| 9 | Adjust time of day schedule and confirm fan response correctly to adjustments | | |  |
| 10 | Test and confirm operation of all interlocks to other equipment or systems (supply and exhaust fan) | | |  |
| 11 | Verify supply air, and reset temp. control functions | | |  |
| 12 | Adjust temperature setpoints to test economizer mode of operation – Economizer operation successful | | |  |
| 13 | Verify damper interlocks and correct modulation in all modes | | |  |
| 14 | Verify duct static pressure control by adjusting setpoints and observing system response | | |  |
| 15 | Test alarm and safeties | | |  |

1. Record the following:

All points listed below which are control system monitored points shall be trended by the controls contractor.

| Point | Time Step (min.) | Minimum Time Period of Trend | CSV File? (Y/N) |
| --- | --- | --- | --- |
| For each Unit being tested: | |  |  |
| OSAT | 5 | 5 days incl. weekend | Y |
| OSAT-WB or enthalpy | 5 | 5 days incl. weekend | Y |
| CC LAT | 5 | 5 days incl. weekend | Y |
| HC LAT | 5 | 5 days incl. weekend | Y |
| SAT | 5 | 5 days incl. weekend | Y |
| Indoor dry-bulb \_\_\_zones | 5 | 5 days incl. weekend | Y |
| Supply fan status | 5 | 5 days incl. weekend | Y |
| Return fan status | 5 | 5 days incl. weekend | Y |
| Supply fan CFM (if available) | 5 | 5 days incl. weekend | Y |
| Return fan CFM (if available) | 5 | 5 days incl. weekend | Y |
| Duct static pressure | 5 | 5 days incl. weekend | Y |

# OUTSTANDING ITEMS

Note outstanding items in table below. Use numbers referenced above.

|  |  |  |
| --- | --- | --- |
| Resolved (Initial / Date) | **Note** | Description |
|  | **1.** |  |
|  | **2.** |  |
|  | **3.** |  |
|  | **4.** |  |
|  | **5.** |  |
|  | **6.** |  |
|  | **7.** |  |
|  | **8.** |  |
|  | **9.** |  |
|  | **10.** |  |

# FIELD NOTES

Fill in as appropriate.

|  |
| --- |
|  |
|  |
|  |
|  |
|  |

# SIGN OFF

System / Equipment has been installed in accordance with the Contract Documents and is ready for Owner acceptance.

|  |  |  |
| --- | --- | --- |
|  | **Signature** | **Date** |
| **Contractor’s Representative** |  |  |
| **A /E Representative** |  |  |
| **Commissioning Agent** |  |  |
| **Owner’s Representative** |  |  |

## END OF TEST