|  |  |
| --- | --- |
| FT: | **22 00 00 - 1** |
| **ITEM:** | **Pumps (Plumbing)** |
| **ID:** |  |
| **AREA SERVED:** |  |

Form Filled Out By:

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

GC = General Contractor; PC = Plumbing 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 note number if deficient.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Item | **GC** | **PC** | **EC** | **BC** | **CC** | **OR** | **A/E** | **CA** |
| Product documentation submitted | XX |  | XX | XX | XX |  |  |  |
| Unit startup completed | XX |  | XX | XX |  |  |  |  |
| Start-up report submitted | XX |  | XX | XX |  |  |  |  |
| Test and Balance (TAB) completed | XX | XX | XX |  | XX |  |  |  |
| SOO programmed | XX | XX | XX | XX |  |  |  |  |
| Prefuctional Checklist completed | 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?** |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
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# FUNCTIONAL PERFORMANCE VERIFICATIONS

**Demonstrate operation of equipment per contract documents including the following:**

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

| **No** | **Item** | **GC** | **PC** | **EC** | **BC** | **CC** | **OR** | **A/E** | **CA** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Activate pump start using control system command. |  |  |  |  |  |  |  |  |
| 2 | Verify pump inlet/outlet pressure reading. Compare to test and balance report, pump design conditions, and pump manufacturer’s performance data. |  |  |  |  |  |  |  |  |
| 3 | Operate pump(s) at shutoff, 50% and 100% flow. Plot test readings on pump curve and verify specified flow is obtained. |  |  |  |  |  |  |  |  |
| 4 | Verify motor amperage per phase and voltage phase to phase and phase to ground. |  |  |  |  |  |  |  |  |
| 5 | Verify motor amperage does not exceed nameplate values |  |  |  |  |  |  |  |  |
| 6 | Verify multiple pumps operate in a lead-lag schedule to equalize wear |  |  |  |  |  |  |  |  |
| 7 | Check and report any unusual vibration, noise etc. |  |  |  |  |  |  |  |  |
| 8 | Simulate power failure and observe pump response. |  |  |  |  |  |  |  |  |
| 9 | Restore power and observe pump response. |  |  |  |  |  |  |  |  |

# 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