

SENTINEL CENTRAL CONTROL CERTIFICATION CHECKLIST

Required for Substantial Completion—to be completed before final walk through.

All installation is performed by Contractor except as noted below.

PROJECT FOREMAN/COMPANY: _____ PHONE #: _____

DENVER PARKS' REPRESENTATIVES: _____

CONTROLLER UNIT ID: _____ FREQUENCY: _____ OPERATIONS DISTRICT _____

MODEL# _____ SERIAL #: _____

PROJECT / LOCATION: _____ DATE: _____

PROGRAMMING AND COMMUNICATION

Verify by

CPS Parks

All controller zone maps, and controller schedule charts per specifications have been supplied. Both establishment and post-establishment schedules have been provided, within site water budget.

CPS has set up WMS software in central including special data, and set to log. Successful communications to Sentinel Satellites is confirmed; Comm Settings are programmed as: **IP / Radio** communications (circle one). Antenna IP address is _____.

CPS has performed flow tests. Zone GPM has been verified to match design flows within 10%, and max flows have been adjusted to 10% above expected flow. Flow watch has been set to **informational / alarm** (circle one). Unexpected Flow GPM threshold has set at _____ (specify GPM).

Contractor and Parks staff have programmed all establishment (and post-establishment schedules as required) complete irrigation programs for all units including start times, run times, zone schedules, and flow constraints and zone data.

CPS has programmed all equipment with correct frequency, and communication between central control, Satellites, Map-to units and/or wireless boards and hand held remote's has been confirmed. If Map-To units are required, specify distance between the Satellite and each Map-to unit: _____ (specify in feet).

Communications: (Note - all Ethernet and auxillary antenna installations also require City EEB inspection).
• If required, Ethernet connection has been installed and is operational at the Sentinel or SRTA/CTM ---(circle all that apply).
• The antenna has been installed with the proper antenna cable, polyphaser, grounding and connections and in a waterproof manner. Cable is routed properly, and is not nicked or damaged. Is there an auxiliary antenna? **Yes / No** (circle one).
Note antenna location (distance and direction from Satellite): _____

If Ethernet connection or auxiliary antenna: Inspection completed by IT/EEB (list date:) _____

ENCLOSURES AND ELECTRICAL

Verification by CPS prior to controller power on: 110 VAC power is connected to controller junction box, and in conduit as required by Electrical Code. The 110 electrical ground wire is connected inside the junction box to the grounding terminal. The green transformer ground wire and yellow common wires are connected to the ground terminal on the first output board.

Ground rods and plate are installed to specifications, have been CAD welded, using #6 bare copper ground wire. Grounding rods are minimum 8' from controller, 16' from other grounding rods. Path of ground wire is smooth and not kinked or bundled in ground box. Controller copper groundwire is connected to "ground" lug in controller. Controller wire, zone wiring or other electrical wiring is not installed within the grounding rod's sphere of influence.

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- Contractor has performed grounding test (with Megger meter) in presence of CPS Representative and grounding provided is 10 OHMS or less. List results: _____. Grounding plate was required to meet grounding requirements: Yes / No (circle one)
- Enclosure has louvers with operational fan, GFI, electrical to City standards installed by manufacturer. Connections are secure and made with waterproof gel filled connectors (DBY or DBR for more than 3 wires). Electrical disconnect is labeled with POC information.
- Zone wiring connections are appropriately installed (90 degree bend, no excessive bare lead length) and all wires are tagged with zone labels, including spare wire. Wires are neatly bundled. All station outputs are in "Auto" position.
- Enclosure is securely mounted on concrete pad per detail, adequate slope exists, and metal mounting template is removed, conduit size/quantity are per detail. Environment is waterproof and insect free. Enclosure does not receive direct hit by irrigation heads.
- Controller has waterproof label inside door with unit code, date of install, model #, frequency, contractor & contact number. Laminated zone and controller schedules are in enclosure.
- All zone wiring has been tested for resistance with OHMS within the manufacturer range for new installation, 13-33 depending on solenoid (31-36 OHMS for Rainbird PEB series). Master valve has been tested for resistance (Bermad valve resistance is 14-16 OHMS). Continuity of spare wires has been tested. A dated log of test results by zone has been furnished, and any zone wiring electrical issues have been resolved.
- For existing sites: Contractor (Parks staff, if in-house project) has provided a pre-construction OHM test, and resolved any field wiring issues. Pre-construction OHM test has been compared to post-construction OHM test to confirm.
- CPS has connected Master valve wire to "MV" position (not to the terminal or to signal cable wires.) Blue master valve wire is connected to yellow common, and green master valve wire is connected to red 24 VAC wire. Confirm controller utility is programmed as normally open (NO).
- CPS has connected flow sensor wires to the "Flow" side of the alarm terminal strip (red +; Black -), or if using multiple sensors to the MSI / Flowulator assembly. Flow sensor wires are armored signal cable, Paige 7171D-A.
- Rain sensor (with bypass switch) is properly installed and connected to the "alarm" side of the alarm terminal strip and green light indicates sensor is functional and synchronized. If wireless, the rain sensor is within 200 feet of the controller, installed a minimum of 15 feet above ground and is not obstructed from rain collection by tree canopy or any other cover. Sensor is oriented in NW direction. Rain sensor has been programmed for operation in Sentinel Special Data.

FLOW SENSORS

- Flow sensor is Data Industrial, model as specified, _____ (indicate model), with body of the flow sensor installed horizontally to ground and flow sensor electronics in a vertical position. Valve box has been installed per the detail and is branded "FS".
- Flow sensor is installed at proper depth and in an unobstructed meter run (10X pipe diameter upstream and 5x pipe diameter downstream), and has been installed in the correct direction. Quick coupler is not installed upstream of flow sensor.
- The flow sensor wire is Paige P-7171D-A or equivalent and is connected at BOTH ends. Polarity of wiring is consistent between flow sensor & the Sentinel Satellite. Wire splices are made with a Ranger Serviseal closure.
- If required, additional interface equipment such as MSI / Flowulator has been installed. Specity: _____
- Flow sensor has been calibrated and set up correctly in field to accurately register flow. Flow sensing has been visually verified at the Sentinel Satellite.

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MASTER VALVES

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Master valve is a Bermad 410 on mainline 3" and larger, Superior 3100 on mainline smaller than 3". Master valve is installed at proper depth and has been installed in the correct direction. Valve box has been installed per the detail and is branded "MV".

Specify model: _____

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The master valve wire is #14 to #10 AWG UL wire colors green and blue and are connected at BOTH ends with waterproof gel filled connectors (3M DBY or DBR for more than 3 wires). Polarity of wiring is consistent between master valve & the Sentinel Satellite.

OTHER ITEMS TO BE ADDRESSED

Contractor Representative Print Name/Company

Completed By: _____ Date: _____

CPS Representative Print Name

Completed By: _____ Date: _____

Parks Planning Representative Print Name

Completed By: _____ Date: _____

Parks Maintenance Representative Print Name

Completed By: _____ Date: _____

Parks Water Conservation Representative Print Name