

REVISION OF SECTION 623 IRRIGATION SYSTEM

GENERAL

623.01 SUMMARY:

Section Includes:

Landscape irrigation system as shown on the drawings for complete coverage to landscape areas. Furnish design for layout, pipe sizing, valving and head types and locations to meet specified criteria.

Report any discrepancies and or modifications to the Landscape Architect.

Related Sections:

Section 214 – Planting

Section 203 – Excavation and Embankment

623.02 SUBMITTALS:

Product Data:

Submit manufacturer's technical data and installation instructions for the landscape irrigation system and control system for all deviations from the proposed sprinkler design.

Operating and Maintenance Data:

Provide instructions covering full operation, care, winterization and maintenance of system, controls and manufacturer's parts catalog.

Include schedule showing length of time each valve is to be open to provide determined amount of water and precipitation rate per control valve, verified by field tests.

Instruct Owner's designated maintenance personnel in proper operation of system, including adjusting of sprinkler heads and winterizing procedures.

Project Record Drawings:

Submit record drawing information prepared by a qualified drafter on site plan furnished by Landscape Architect. Show locations of main connection, pressure lines at 100' intervals, all valves, drip line blowout valves, changes in zoning, changes in numerical

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sequence at control valves, other items required by Landscape Architect. Dimension to nearest foot from suitable permanent reference points.

623.03 QUALITY ASSURANCE:

Provide each element of landscape irrigation system produced by the manufacturer, including heads, valves, piping circuits, controls and accessories.

Installer must be an experienced firm specializing in irrigation systems with not less than 5 years experience in this specialty and having successfully completed not less than 5 projects of scope similar to that of the Project.

623.04 MAINTENANCE:

Extra Materials:

Deliver to Owner the following items:

Two sets of special tools for disassembly and adjustment of each type of head and valve.

Two heads of each type of sprinkler.

623.05 GUARANTEE:

The Contractor shall guarantee all materials, equipment and workmanship furnished to him to be free of all defects of workmanship and materials, and shall agree to make replacements at his expense and at any time within one (1) year from the date of commencement of the maintenance period.

PRODUCTS

623.06 MANUFACTURERS:

Provide system as manufactured by Rainbird and Rainmaster or as specified in schedules.

623.07 MATERIALS:

Pressure Pipe:

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PVC Plastic Pipe ASTM D2242, SDR 21, Schedule 40

PVC Plastic Pipe, ASTM D2242, SDR 21, Class 200

Lateral Pipe

Polyethylene (PE) SDR

Drip Tubing (downstream from control valves):

Polyethylene Pipe for drip tubing.

Pipe Sleeves:

Schedule 40, PVC Plastic Pipe

Provide sleeves at least 2 pipe sizes larger than line carried. Provide sleeves below all paved, gravel areas as indicated on drawings.

Pipe Fittings:

For polyethelene plastic pipe, as recommended by the Manufacturer.

Valves:

Manufacture's standard, of type and size indicated, and as follows:

Key Operated Valves: Manuel valves, fitted for key operation.

Automatic Control Valves: Globe valves with self-cleaning scrubber with stainless steel screen, operated by low-power solenoid, normally closed, manual flow adjustment and bleed nut.

Valve boxes:

Manufacturer's standard plastic type, with cover. Furnish sizes and types suited to job conditions.

Sprinkler Heads:

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Manufacturer's standard unit designed to provide uniform coverage over entire area of landscaping as shown on drawings at available water pressure, as follows:

Drip Emitters: Rainbird Drip Emitters

Backflow Preventer

Provide Febco 825Y Reduced Pressure assembly.

Backflow Preventer Protection Enclosure

Provide Gorilla Cage GC-2 Green Medium Backflow Preventer Protection Enclosure as manufactured by Gorilla , (281) 705-9701.

Drainage Backfill:

Cleaned gravel or crushed stone, graded from 3" maximum to 0.75" minimum size.

623.08 AUTOMATIC CONTROL SYSTEM:

Furnish a low voltage system manufactured expressly for control of automatic circuit valves of landscape irrigation system. Provide unit of capacity to suit number of circuits as indicated.

Controller Enclosure: Manufacturer's standard enclosure with locking cover, complying with NFPA 70.

Transformer: To convert building service voltage to control voltage of 24 volts.

Circuit Control: Each circuit variable from approximately 5 to 60 minutes. Include switch for manual or automatic operation of each circuit.

Timing Device: Adjustable, 24 hour and 14 day clock to operate any time of day and skip any day in a 14 day period.

Allow for manual or semi-automatic operation without disturbing preset automatic operation.

Control Wiring: No. 12 or heavier for common wire and No. 14 or heavier for zone wire direct burial insulated copper wire AWG, UL approved and sized as recommended by controller manufacturer. Provide connectors, accessories as required. Provide with color

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coded insulation to differentiate function and circuit. Furnish wiring diagrams showing color coding:

White - common
Red - zone wire
Black – spare

Supply 2 spare wires from controller to terminal valve boxes on each end of irrigation run.

EXECUTION

623.09 EXAMINATION:

Verify size and location of pipe sleeves at paving, connections to water service and coordination with other site work.

623.10 PREPARATION:

Furnish sleeves to Installers of paving and walks for piping or control wiring that crosses exterior walks or paving. Direct such installers to assure correct locations and elevations.

Furnish at least 2 pipe sizes larger than pipe to be accommodated. If sleeves are missing, install them by boring or jacking. Resort to cutting only where acceptable to Owner

623.11 LAYOUT:

Design Pressures: Based on static pressures at site.

Location of Emitters: Design location is approximate. Make minor adjustments as necessary to avoid plantings and other obstructions.

Mark routing of pressure lines with powdered lime and identify head locations with flags. Layout may be modified, if necessary to obtain coverage, to suit manufacturer's standard heads. Do not decrease the number of heads indicated unless otherwise acceptable to the Landscape Architect.

Contact Landscape Architect 16 working hours in advance and request inspection of layout and staking. Architect will observe layout and indicate any changes as needed..

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Observation does not relieve Installer of coverage problems due to improper placement of heads after staking

623.12 TRENCHING:

Excavate straight and true with bottom uniformly sloped to low points. Provide 6" minimum clearance horizontally between lines. Do not place parallel lines over one another or place lateral and pressure lines in same trench except where acceptable to Architect.

Trench Depth: Excavate trenches to a depth of 3" below invert of pipe, unless otherwise indicated.

Minimum Cover: Provide 18" minimum over top of installed pressure piping and control wiring and 12" minimum over lateral piping.

623.13 INSTALLATION:

General:

Unless otherwise indicated, comply with requirements of the applicable plumbing code.

Backflow Device:

Install backflow device according to manufactures recommendation. Install hose bib and other provisions for draining of backflow device for winterization purposes.

Control Valves:

Install in valve box, arranged for easy adjustment and removal.

Provide union on upstream and downstream side of valve.

Adjust automatic control valves to provide flow rate of rated operating pressure required for each sprinkler zone.

Install one valve per valve box, arranged for easy adjustment and removal. Allow minimum 12" between valves. Adjust valves to provide flow rate of rated operating pressure required for each lateral.

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Valve Boxes and Covers:

Install one box and cover for each valve installed. Place top even with finish grade.

Piping: PVC Mainline and Polyethylene Laterals in sleeving (under paving and gravel).

Lay pipe on solid sub-base, uniformly sloped without humps or depressions.

Install plastic pipe in dry weather when temperature is above 40 F. in strict accordance with manufacturer's recommendations.

Allow joints to cure at least 24 hours at temperatures above 40 F. before testing, unless otherwise recommended by manufacturer.

Apply Ring-Tite PVC: Prepare ends by beveling and verify that rings are in place. lubricant to clean surfaces and follow manufacturer's recommendations.

Piping: Drip Tubing

Lay pipe on grade, uniformly sloped without humps or depressions.

Install plastic pipe in dry weather when temperature is above 40 F. in strict accordance with manufacturer's recommendations.

Allow joints to cure at least 24 hours at temperature above 40 F. before testing, unless otherwise recommended by manufacturer.

Drip tubing shall be buried underground, secured to ground with wire staples supplied by manufacturer.

Sprinkler Heads:

Flush circuit lines with full head of water and install emitters after hydrostatic test is completed.

Install emitters at drip line of trees and vines.

Install Gorilla Cage Backflow Preventer Protection Enclosure per manufacture's recommendation and as indicated on the drawings.

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623.14 BACKFILLING:

Do not backfill in freezing weather or leave trenches open for more than 28 hours. Leave trench backfill slightly mounded to allow for settlement. Keep the site cleaned of excess or waste materials as backfilling progresses.

Carefully backfill with approved excavated materials free of rock and debris over 1" in size. Place and compact as specified in Section 02200 including compacted densities.

Hand place the first 6" of backfill or to top of pipe and walk the trench bottom to secure the position to the pipe and wire.

Deposit and compact remainder in layers as specified in Section 02200.

Use topsoil for top 4" of backfill except at walks or paving.

Repair any backfill settlement occurring during the warranty period, including any

replacement or repair of sod, plant material, parking surface or structure.

623.15 CONTROL WIRING:

Bury control wiring between controller and electric valves in sprinkler main line trenches or in separate trenches.

Make electrical connection at valve to allow for pigtail so solenoid can be removed from valve with sufficient slack to allow ends to be pulled 12" above ground for examination and cleaning.

Bundle 24 volt wires at 15' to 20' intervals and lay with mainline pipe below and to one side of the trench.

Provide an expansion loop at every valve and every 100' formed by wrapping wire at least eight times around a 0.75" pipe and withdrawing pipe.

Make splices and connections in accordance with NEC. Run 2 spare wires, as previously indicated, from controller along full length of main (pressure) lines.

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Install as per manufacturer's instructions or detail. Connect remote control valves to controller in numerical sequence as shown on the drawings.

Final electrical connections are the responsibility of a licensed Electrical Contractor.

623.16 TESTING:

General:

Notify Landscape Architect in writing not less than 16 working hours in advance of when testing will be conducted. Conduct tests in the presence of the Landscape Architect.

Before sprinkler heads are set, thoroughly flush the lines to remove all foreign matter.

Flush from dead end fittings for a minimum of five minutes under a full head of pressure.

Hydrostatic Test:

Test water piping and valves, after backfilling trenches, except leave joints exposed, to a hydrostatic pressure of not less than the working pressure, unless otherwise indicated. Piping may be tested in sections to expedite the work. Remove and repair piping, connections, valves which do not pass the hydrostatic testing. Piping must hold pressure not less than 3 hours and pressure supply lines not less than 48 hours.

Operational Testing:

Perform operational testing after hydrostatic testing is completed, backfill is in place, and sprinkler heads adjusted to final position.

Demonstrate to the Architect that system meets coverage requirements and that automatic controls function properly.

Coverage requirements are based on operation of one zone at a time.

623.17 ADJUSTMENT:

After completion of grading, seeding of grass areas, carefully adjust sprinkler heads so they will be flush with or not more than 0.5" above grade.

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Flush and adjust all sprinkler heads for optimum performance and to prevent overspray onto walks, roadways, and buildings.

If it is determined that adjustments in the irrigation equipment will provide proper and more adequate coverage, make such adjustments prior to final acceptance at direction of Architect. Adjustments may also include changes in nozzle sizes and degrees of arc as required.

Correct areas which do not conform to designed operation requirements due to unauthorized changes or poor installation practices.

623.18 WINTERIZATION:

Installer shall winterize by draining the complete system at the conclusion of the first sprinkling season within 3 days of notification by the Owner. Drain by using compressed air or similar method. Re-open, operate and adjust system malfunctions accordingly during April or May of next season as requested by the Owner.

END OF SECTION