

Salem Parks and Recreation – Parks Division

Irrigation Standards and Specifications

1. Design

A. Upon final inspection a water audit shall be performed and a minimum 70% Distribution Uniformity (DU) shall be achieved. Any adjustments required to achieve minimum DU will be borne by the installer.

2. Hydraulics

A. Operating pressures for each component in the system should be within manufactures specified pressure ranges to operate each head in the system.

B. At no location in the system shall water flow exceed 7ft/second. Regulate pressure as needed. Manufacturer's hydraulic requirements and specifications shall not be exceeded.

C. Filters should be used as needed or recommended by the manufacturer.

D. Appropriate and required back-flow prevention shall be installed according to current legal requirements.

3. General Construction Requirements

A. Verify and have marked the location of all underground utilities and obstructions.

B. Install all irrigation system components using details in the plans. Use sealant tape whenever needed on threaded connections to make them as secure as possible.

C. Use of Teflon paste (pipe dope) is unacceptable.

D. Stake pipe and head locations for approval prior to trenching. Trench to the depths on the plan to accommodate pipes and fittings. Barricade and secure open trenches to effectively prevent accidental entry if left open over night.

E. Upon final inspection a water audit shall be performed and a minimum of 70% efficiency shall be achieved. This audit shall be the responsibility of the installer.

4. Pipe Installation

A. Protect PVC pipe and fittings from prolonged exposure to sunlight.

B. Prevent foreign materials from entering pipe during installation.

C. Lay pipe in the trench in a snake-like manner with bell ends facing up stream.

D. Maintain a 2 inch minimum lateral clearance between pipes located in the same trench.

E. Apply solvents and glues using manufacturer's instructions as listed on the label.

- Thoroughly flush mainlines before installing control valves.
- Laterals before installing sprinklers.

5. Electrical Wiring

- A.** Coil an additional 12 inches of wire at each automatic control valve.
- B.** Splice wires at each control valve using water proof wire connectors.
- C.** Use a white wire for the common wire, red for the control wires, yellow for the master valve and blue for extra control wires to each valve.
- D.** Only connect the value wires to the control wires inside a valve box.
- E.** A 3M DBY™ wire splice must be used on all wire connections.
- F.** Wire must remain solid from control structure to valves, NO splicing.
- G.** If splices are necessary, all splices must be contained in a valve box or junction box for future maintenance. NO splices are to be direct buried.
- H.** No less than 14 gauge single core plastic shielded wire specified for underground use may be used from controller to valves as well as from master valve to controller.
- I.** Control wires should be clearly marked with numbers at the valve location and also the controller location.
- J.** An additional spare blue wire shall be looped from the controller to each valve manifold.

6. Backfilling

- A.** Bed all pipe 2 inches (minimum) surrounding the pipe with native material excavated from the trench and passing through a number 4 sieve.
- B.** After the bedding has been placed, backfill and compact the trenches to the same density as the ground adjacent to the trench.

7. Spray Heads

- A.** Rainbird 1800 Series™ spray heads with Seal-A-Matic (SAM) or Hunter Pro Spay heads with a check valve are acceptable.
- B.** Adjust sprinkler nozzles to allow for adequate coverage and at the same time minimize overhead spray onto the walks, roads, driveways and buildings.
- C.** All heads shall be installed as per manufacturer's specifications.

8. Rotor Heads

- A.** Hunter I-40 opposing nozzle or I-20 rotor heads with 6 inch pop up are acceptable.

B. Adjust sprinkler nozzles to allow for adequate coverage and at the same time minimize overhead spray onto the walks, roads, driveways and buildings.

C. All heads shall be installed as per manufacturer's specifications.

9. Valve Boxes

A. Install valve boxes level with finish grade and place them parallel or perpendicular to adjacent curbs, sidewalks or driveways.

B. Place aggregate in sumps.

C. Master valve shall not be direct buried and will be accessible in an adequately sized valve box.

D. Control structure shall include and consist of all power and lightning surge protection and be contained in an approved pedestal and closure.

E. No more than 1 control valve shall be installed in one valve box. Valve box size shall be no less than standard size.

10. Pipe

A. Schedule 40 Polyvinyl Chloride (PVC) irrigation pipe shall be used in all irrigation installations and repairs.

B. Pipe sizes larger than 3 inches diameter may require schedule 200 or other pipe as specified.

C. Mainline- no dielectric connections. (i.e. copper to galvanized)

D. All glue, primers, Teflon tape, pipe dopes, etc. must be approved type for the intended purpose as recommended by the manufacturer.

E. Control valve box must not rest on any pipe or fittings.

F. Tap saddles should be used instead of tees on 4" or larger pipe.

11. Valves

A. Zone valves shall be Rainbird GB_m series brass valves.

B. All valves shall be installed in a valve box and not direct buried.

C. A brass ball valve shall be installed on the upstream side of each valve cluster in order to isolate valves for maintenance and repair.

D. Unions shall be schedule 80 PVC and used to connect all control valves other than the backflow preventer.

12. Master Valve

A. AC Master Valve shall be Bermaud IR-920-mo-55-g-c-a5-pg-4ac-pp-g34-r Series combo master valve that has a normally open solenoid.

B. DC Master Valve shall be BERMAUD IR-920-mo-55-g-c-a5-1ds-pp-g34-r Series combo master valve that has a normally open solenoid.

C. Wire from the point of connection/flow meter to the controller shall be Beldon one pair shielded.

D. The Beldon shielded wire must remain solid from the flow meter to the controller, no splicing.

E. Wire from the flow sensor/master valve to Motorola Controller must be two pair.

F. Wire must remain solid from the controller to the master valve, no splicing.

13. Controller

A. Controllers shall be Motorola Irrinet M™ depending on Motorola ICC capabilities of 450 mhz radio frequency range or trunk. Salem Parks and Recreation will specify on every application. Contractor shall contact the Salem Parks Manager for specific model and capacity.

B. Motorola Ace Units shall be used depending on MIR capabilities. Salem Parks and Recreation will specify on every application.

C. 1.5 inch and larger control valves must be installed 24 inches away from any other object in the valve box.

D. 24 Volt wire to master valve must be orange and white.

14. Fittings

A. Pre-manufactured swing joints shall be used to connect all quick-coupler valves.

B. Double O-ringed swing joints may be used for swing joint connections where applicable.

15. Plastic Nozzles and Bubblers

A. Radius pattern fixed for full circle or variable arc nozzle (VAN) for any pattern less than 360 degrees. Half and quarter nozzles can be used IF they are used in areas that are exactly 180 or 90 degrees respectively. MP rotator nozzles can be used in shrub areas or flower beds but not turf.

B. Matched precipitation rates shall be the objective in irrigation design and installation.

- C. All nozzles shall be installed with manufacturer filter screens.

16. Winterization Capabilities

- A. Two (2") and smaller stop and waste valve must be used at the point of connection and due to back-flow prevention regulations one must be installed after back-flow at lowest point of connection.
- B. There must be a quick-coupler installed at all points of connection for compressed air winterization. This shall be installed down-line from back flow preventer and stop and waste valve.

17. Back-Flow Prevention

- A. All back-flow prevention devices shall meet all current state and local codes "RP".
- B. The RP back-flow preventer shall be a Wilkins Model 375 A.
- C. All back-flow devices and parts shall be capable of being tested and serviced without removal of device from the line.
- D. Unions shall be installed on each side of the back-flow device to allow removal and maintenance of the unit and shall be constructed of brass and galvanized steel.
- E. All above ground piping shall be galvanized steel or ductile iron pipe.
- F. All above ground valves shall be constructed of brass or cast iron.
- G. An enclosure should be included unless the back-flow device can be installed within a tool room or other enclosed facility.

18. Stop and Waste Valves

- A. Mueller™ heavy duty brass valve with a one piece shaft and O-ring shall be used.
- B. Valve key should be T' handle style 1.5m minimum in length of rigid steel. Key end must fit the stop and waste valve nut.

19. Quick-Coupler Valves

- A. All quick-coupler valves must be Rainbird™ #44 constructed of heavy-duty brass with a 25mm two-piece body design.

Salem Parks and Recreation – Parks Division

Park / Trail Standards and Specifications

1. Desertscape - Xeriscape

- A. Type of rock / boulders – Surface rock size and location may be required in park placement.
- B. Type / Size of ground cover rocks. – Less than 2-3 inches.
- C. Size of boulders – 24 - 36 inches in height / 80-150 pounds.
- D. Color of Desert Scape. – Red or dark in color, NO grey.
- E. Bark / Ground Cover – Wood chips are ideal. Colored chips may be required.
- F. Plants Shrubs – Less intensive water consuming. No thorns or poisonous attributes.

2. Plants / Foliage (Preferred)

- A. Smooth Sumac (*Rhus glabra*)
- B. Woods Rose (*Rosa woodsii*)
- C. Purple Sage (*Salvia leucostachya*)

3. Grasses and Trees

- A. Flowering Pear / Sycamore / Lindens.
- B. No dangerous tree types (*Cottonwood, Trees of Heaven, Willows, Poplars, Russian Olive, Box Elder and Chinese Elm are non-approved option. Preexisting trees of this type may not be incorporated into a site plan.*)
- C. 3 inch caliper on all planted trees.
- D. Tree stakes – required on all trees planted along walkways or near playgrounds.

4. Park Maintenance Rules

- A. Salem City desires 3 acre plus parks in order to be turned over for city servicing.
- B. Level space. Usable
- C. Must have approved placement of trees.
- D. Number of trees per acre.

5. Trails – We are trail friendly

- A. Requirements:
 - 1. Width -
 - 2. Base – Must be installed on approved base material.
 - 3. Boards – Boards placed on bridges must be an approved hard wood.

4. Lighting – Requirements must meet city street standards.

6. Pavilions

- A. Style – TBA in conjunction with park size and target park usage.
- B. Size - TBA
- C. Amenities (Tables, Grills, Trash cans, Closet)

7. Playground

- A. Style of System. Prefer >Miracle, Lifetime, Play World, or Game Time.
- B. ADA Standards
- C. Spacing Standards – Distance requirements from curbs, and the play structure.
- D. Safety Fall- Wood or rubber mulch fills will be required and must meet ADA Standards.

8. Fencing

- 1. Link -
 - a. Gage – Size of link will be determined by planned use of said park.
 - b. Slats – May be requested due to location and surrounding areas.
- 2. Concrete Sectional Fencing – Use to separate parks from industrial and commercial properties.
- 3. Vinyl – Allowed in limited places.
- 4. Concrete Mow Strips – Required for all fencing.

Salem Parks and Recreation – Parks Division

Neighborhood and Development Parks - Salem City requires any/all.

Development amenities style park to meet the following requirements.

- 1. No park shall be smaller than three acres.
- 2. All parks must be mature and established for at least one year prior to city ownership.
- 3. All parks must include a functioning sprinkler system, clock and system blue print.

4. Parks must be 70% level ground.
5. Location of trees will be determined by Parks Director.
6. A. Trees must meet approved tree list.
B. Six trees per one acre ratio will be standard for new parks.