

Best Practices – Drip Irrigation

Installation and Management

Revised 2-20-2021

Best Practices documents serve as the Serrano Park Community Association specifications for projects and area management. They are to be referenced in contracted work orders and used to inspect the completed work orders.

Background:

Drip irrigation practices are being adopted for specific areas within the Serrano Park HOA green areas. These areas include embankments, simulated forested areas, flower beds, and other non-turf areas. Most of our irrigation was installed in the late 1980's using technology that is outdated by today's standards and is largely composed of aging components. It was installed before water was scarce and droughts were as frequent and severe as they are today. Conversion of certain areas to modern drip irrigation is necessary to address these many issues.

Primary reasons for drip conversion from sprinklers in these target areas include:

- More efficient irrigation that greatly reduces water usage.
- Better water coverage.
- Eliminates runoff on slopes.
- Better reliability in these areas.
- Easier repair.
- Reduced initial and replacement cost.
- Flexible configuration for better tree irrigation.
- Better irrigation control during drought periods with restricted water usage.
- Grants, rebates, and incentives are available to help fund upgrades.
- Compatible with simulated forestry management plans utilizing saplings.

As technology changes, efficient water use becomes more critical, maintenance costs and urban forest management practices become refined and we continue to learn, these Best Practices documents will be updated.

Applicable Areas:

- Embankments
- Simulated forested areas
- Flower beds
- Areas with drip irrigation already installed
- Other non-turf areas.

New drip irrigation installation specifications:

- Product: Netafim 17mm Techline HCVXR
- Installed on surface, covered with mulch
- Installation Reference: Netafim Install Guide. Stagger emitter spacing on lateral adjacent lines.
- Maintenance Reference: Netafim "Drip Irrigation System Handbook", V001.02 2016

- Emitter flow: 0.7 GMH
- Lateral spacing: 18" (16" - 20"), Double loop around mature trees. Single loop around small trees and shrubs, > 4' tall.
- Max lateral length: 221'
- Minimum supply pressure: 35 PSI
- Watering cycle:
 - Drought resistant trees and shrubs: 3/4" water (54 min) per cycle, Winter: 1x per week. Summer: 2x per week.
 - Other trees and shrubs: 1/2" water (36 min) per cycle, Winter: 2x per week. Summer: 3x per week.
- Expected system life: at least 10 to 15 years if properly maintained.

Upgrading and repairing older installed drip specifications:

- Product: Netafim 17mm Techline CV
- Installed on surface, covered with mulch
- Installation Reference: Netafim Install Guide. Stagger emitter spacing on lateral adjacent lines.
- Maintenance Reference: Netafim "Drip Irrigation System Handbook", V001.02 2016
- Emitter spacing: 12"
- Emitter flow: 0.9 GMH
- Lateral spacing: 18" (16" - 20"), Double loop around mature trees. Single loop around small trees and shrubs, > 4' tall.
- Max lateral length: 225'
- Minimum supply pressure: 35 PSI
- Target watering cycle:
 - Drought resistant trees and shrubs: 3/4" water (48 min) per cycle, Winter: 1x per week. Summer: 2x per week.
 - Other trees and shrubs: 1/2" water (24 min) per cycle, Winter: 2x per week. Summer: 3x per week.

Drip irrigation maintenance requirements:

- As needed:
 - Repair broken lines and leaking valves.
 - Report plant health and coverage recommendations for review.
- Monthly:
 - Check filters and service as necessary
 - Check for leaks and repair as needed
 - Check for proper water coverage and repair as needed.
 - Check for proper watering rate based on shrub and tree health. Adjust the controller as needed.
- Annually:
 - Flush lines
 - Check for tubing serviceability (brittle or cracking lines). Report if work order is needed.

Drip irrigation system maintenance discussion:

In Serrano Park green areas, sprinkler head breakage taking down an entire irrigation zone and wasting water, is an almost daily occurrence. In comparison, day to day maintenance of drip systems is rarely needed. However,

scheduled maintenance of drip irrigation systems is more critical and time consuming, than scheduled maintenance of conventional sprinkler systems. The primary reasons are that sprinkler heads are more visible than drip emitters and proper coverage is easier to check with sprinklers, and that drip systems have regulators and filters to service. The total costs of maintenance of drip systems are far less than sprinklers overall. Drip systems should be relatively trouble free for many years if the maintenance checks and steps are performed as specified above.

For the following, refer to the manufacture's handbook for specific details not specified above.

To be performed monthly or when performance issues are suspect:

The first component to check is the Y filter, which is normally found at the beginning of the system, right after the control valve. Filters are often neglected and never cleaned. With the system valve closed, unscrew the filter cover and remove, inspect, and if necessary clean the screen or disk element with a brush or hose. If the screen element is damaged it should be replaced.

It's also necessary to flush out the lateral lines on an annual basis or when a line was repaired. To do so, open the system control valve and unscrew the flush cap (or other end closure fitting) at the end of the poly tubing. Let the water run at full volume for a minute or two, making sure the water runs clear. If multiple line ends are present on a single zone, flush them out one at a time.

After flushing the lines, leave the system running, and walk the entire drip zone line, and check each emitter if visible for leaks, clogs, and correct flow. Clogged or malfunctioning emitters should be replaced with emitter tube of the same type. Check all compression or insert fittings for leaks and replace if necessary. Sub-surface emitters are not visible but verify that there are no gaps in the wetted area on the soil surface.

Finally, make sure the pressure regulator is functioning by installing a pressure gauge at the end of the line and checking the dynamic pressure. If the pressure is above the regulators limit, the regulator should be repaired or replaced.

References:

- Netafim Install Guide.
- Netafim "Drip Irrigation System Handbook", V001.02 2016
- <https://www.netafimusa.com/landscape/products/product-offering/driplines/>
- ISO 9161, "Agricultural irrigation equipment — Emitters and emitting pipe — Specification and test methods", Second Edition, 2004-01-15
- <https://rightscapenow.com/programs/commercial-landscape-irrigation-improvement-program>