



NETAFIMTM

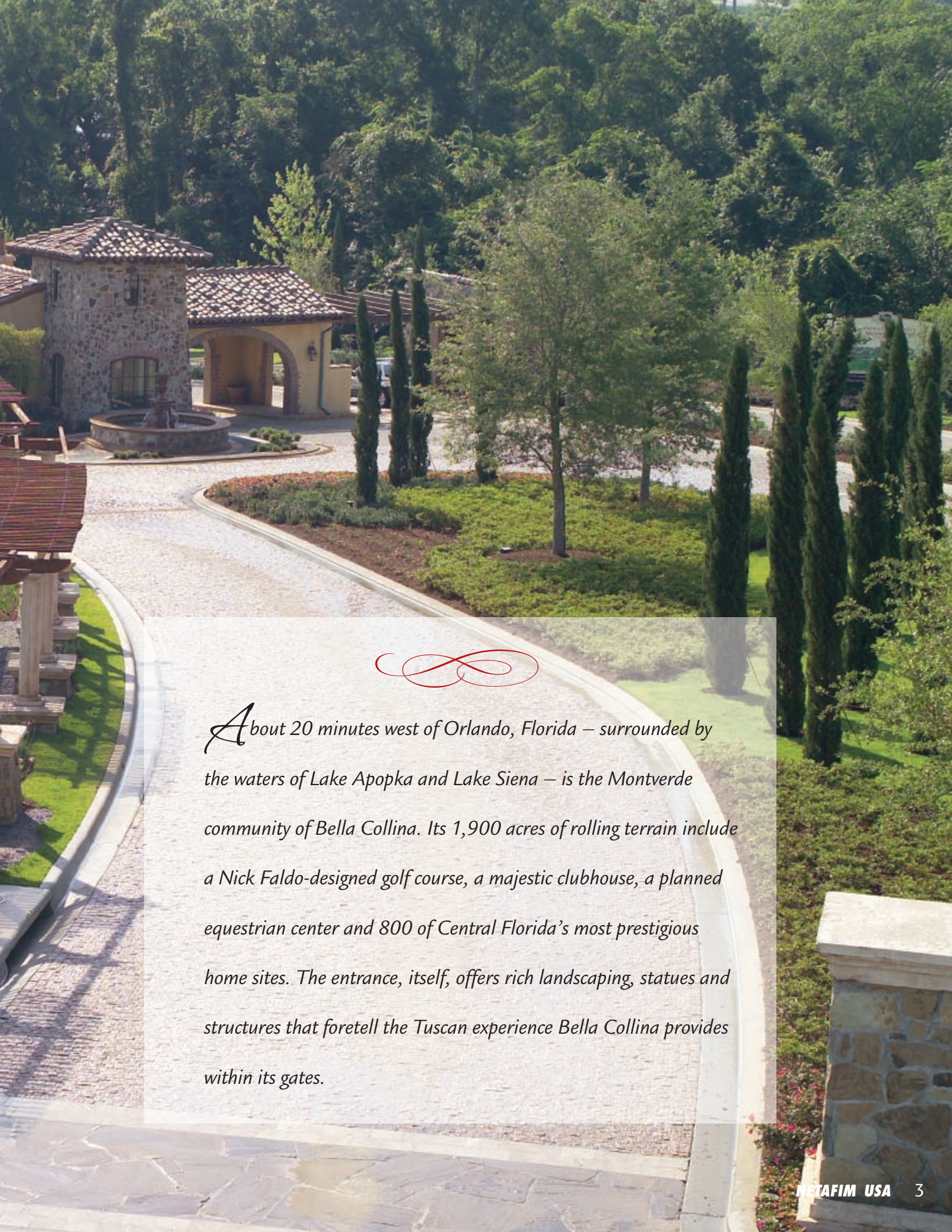
USA

For Landscape Professionals

Bella Collina

**Turning a modest water allotment
and sandy soil into a Garden of Eden
in upscale Florida private community**





About 20 minutes west of Orlando, Florida – surrounded by the waters of Lake Apopka and Lake Siena – is the Montverde community of Bella Collina. Its 1,900 acres of rolling terrain include a Nick Faldo-designed golf course, a majestic clubhouse, a planned equestrian center and 800 of Central Florida’s most prestigious home sites. The entrance, itself, offers rich landscaping, statues and structures that foretell the Tuscan experience Bella Collina provides within its gates.



a beautiful vision

The landscape vision

Bella Collina is a promise kept. When developer Bobby Ginn first visited the site, it reminded him of Tuscany, Italy. He envisioned a Tuscan architectural and landscaping theme that would take advantage of its natural rolling terrain and lakeside beauty. But it would also call for an intensive landscape and irrigation plan.

The challenge

The Bella Collina project posed lead landscape irrigation designer, Mitchel Walker of Masuen Consulting, an interesting challenge. He had to develop an irrigation system for a Tuscan landscape design – rich with lush Mediterranean vegetation – that had to be sustained with a very modest allotment of irrigation water. The allotment was part of the Saint Johns River Water Management Consumptive Use permit for the project.

The water allotment was only one issue. The site's terrain is naturally undulating and composed entirely of

sugar sand, Florida's worst soil for growing lush landscape material. And while the water source – Lake Siena – is both plentiful and literally laps the site's shoreline, it has a naturally high level of bryozoa and chironomid larva, which can clog pipes over time. These were all important factors that played into the selection of the irrigation system materials and design concepts.

The solution

Bella Collina's landscape plans include 236 acres – roughly 53 acres of grass and 183 acres of plants, including citrus trees, magenta Bougainvillea, spiraling Italian Cypress trees and bright



Mitchel Walker is a principal of Masuen Consulting LLC and the lead Landscape Irrigation Designer of Bella Collina and other Ginn Resorts projects, including Ginn Sur Mer, Bahamas; Ginn Reunion Resorts, Orlando, FL; Tesoro, Port St. Lucie, FL; Laurelmore, Boone, NC; Conservatory, Palm Coast, FL; and The Gardens, Palm Coast, FL.



pink Knockout Roses. Drought-resistant plants, such as Plumbago, and ornamental grasses, complement the design and help conserve additional water. About 182 acres of the site’s natural lakeside vegetation were kept as part of the design, as were many of the area’s ancient oak trees.

“By incorporating this mix of new and existing vegetation, drought tolerant grasses, and using primarily drip irrigation, it’s clear we’ll be able to landscape all 236 acres and still stay within our



“... drip irrigation was a wise investment and the only way to make this landscape vision happen.”

– Mitchel Walker

water allotment,” explained Walker. “If we hadn’t gone with drip, we would only have been able to landscape 135 acres, and we’d have had to cut out some of the plant choices. So Bella Collina is a far more beautiful place because of our heavy use of drip,” said Walker.

“With a drip irrigation system, all the water goes directly to the root zone of the plants,” said Walker. “So you don’t lose water to evaporation, wind, or run-off down pavement into gutters, as you do with overhead spray irrigation.” Walker explained that drip also provides a lower volume of water over a longer period of time. This allows plants to actually uptake most of the water being delivered as opposed to overhead spray irrigation, which provides high volumes of water over shorter periods of time. “With overhead spray, the precipitation rate is much faster, and with sugar sand soils,

you need multiple run times in a day to match the soil’s moisture holding capacity to the water needs of the plants,” said Walker. “These multiple run times would only exacerbate the inefficiencies of overhead spray. That kind of waste was not compatible with our focus on water conservation. Drip was the only viable answer.”

“Drip irrigation costs more to install than traditional overhead spray irrigation,” said Walker. “But when you look at all the challenges we had to overcome, drip was absolutely the right system for Bella Collina. The bottom line is that we had a modest water allotment and the goal of creating an Eden-like landscape design. When I laid out the facts and the numbers, Ginn Resorts was convinced, as I was, that the drip irrigation was a wise investment and the only way to make this landscape vision happen.”

About the drip system

Landscape installations began in October 2005 with completion of the first major phase of Bella Collina’s common areas scheduled for early 2008. The scope of this first phase of Bella Collina’s landscaping project includes 83 acres of turf, shrubs and planter areas, most of it irrigated with drip.

The drip system was designed to accommodate the issues presented by its water source, its topography and soil conditions. From the main intake pipe in Lake Sienna, the source water is filtered at



the primary pumping station using a battery of automated Netafim disc filters to accommodate a 3,000-gpm peak demand being delivered by three 100-horsepower centrifugal pumps. The filtered water then feeds into a 16-mile main line throughout the site buried 36" below the surface. From there, the water is distributed through secondary pipes to 266 different zones of dripperline, each run by an automatic zone controller tied to the central control system.

The irrigation system, to date, includes 3.1 million linear feet of Netafim's Techline® CV dripperline. The selection of Techline® CV was critical for water conservation on this project, as Techline® CV dripperlines do not drain at the end of the irrigation cycle. The "CV" stands for "Check Valve" which is incorporated into the dripper within the dripperline. Though Techline® CV requires a minimum of 15 psi to operate, each dripper will turn off at 2 psi, stopping the irrigation water from draining out of the system in low areas. Coupled with pressure regulation



Source water from Lake Siena is pumped through Bella Collina's filtration system, Netafim's Galaxy Disc Filter, before being distributed to the irrigation pipes.

at each dripper, this ensures a consistent flow of water out of each dripper, resulting in very uniform distribution of water for accurate water management and conservation.

For shrub beds, Walker's initial plans called for sub-surface dripperline to be buried 4" below grade. During installation, Austin Outdoor, Bella Collina's landscape

bella's lotscapes

Shrubs and turf on one control zone

A significant portion of the first phase of the Bella Collina landscaping project includes its "lotscapes," which cover the average 12'-wide easements from the sidewalk to the street curb on both sides of eight miles of roadway. The lotscape includes long, narrow areas of grass adjacent to plant beds. The Landscape Architect for the irrigation system in the lotscape areas was Michael Prevost, ASLA, principal of Prevost Stamper Incorporated (PSI).

"Often, in communities like Bella Collina, the homeowners are responsible for the landscaping and irrigation of these easement strips," said Prevost. "But Ginn Resorts was totally committed to landscaping that saved water and kept the aesthetic vision consistent." He said that commitment led to the selection of not only plants with low water needs, but also the turf. Austin Outdoor, the landscape contractor on the project, and Ginn Resorts selected Bahia grass because it requires about a fourth of the water as the more traditional St. Augustine grass. The selection conserves huge



Michael Prevost, ASLA, is a principal of Prevost Stamper Incorporated and the Landscape Architect of Bella Collina's lotscape irrigation system.



contractor, amended the installation plans to use an on-surface method that is also recommended in Netafim guidelines. The dripperline is placed on top of the soil then covered with 2" of mulch. For larger shrubs and trees that require more water than surrounding plants, the dripper-

line is coiled multiple times around the base placing more water emitters in the root zone. Once the plants are placed, the dripperline is covered with a brown hardwood mulch. This allows landscape crews to more easily do initial and future plantings without damaging the dripperline.



To irrigate shrub bed areas, Netafim's Techline® CV dripperline may be buried in trenches or placed on the soil surface. At Bella Collina, landscape contractor Austin Outdoor places the dripperline on the surface to help simplify installation.



After the plants are set, the dripperline is covered with 2" of mulch to hide it and to protect against evaporation of water.


amounts of water over the course of a year. And Bahia grass also has very similar water needs to the plants in the lotscapes.

"Because the Bahia grass and the plants have almost identical water needs," said Prevost, "we had the opportunity to look at an irrigation system that kept them on the same control zone." He chose drip to maximize efficiency and uniformity in the long, narrow strips of landscaped area. "It's not just that there is less wasted water with drip," said Prevost. "With drip, you can also place the pipe in long rows and irrigate more area on fewer valve zones." He said that traditional overhead fixed spray would have required more valve zones and more control stations than drip. This would increase installation costs and maintenance costs over time. "With all those factors, plus the success of Netafim's product in the other areas at Bella Collina, it was an easy decision to go with drip," said Prevost.

The turf areas in the lotscapes are irrigated with Netafim's Techline® CV dripperline buried at 4" below the surface with 12" of lateral spacing between dripperlines.

This layout allows for ideal saturation of Bella Collina's sandy soil in the turf's root zone with no dry patches or unnecessary overlap of saturation, which would be wasted water.

Before becoming involved in the Bella Collina lotscape project, Prevost had developed a high level of confidence using Netafim's drip irrigation products on large-scale projects. He designed the irrigation systems for the interior landscaping at the Gaylord Palms Resort in Orlando and the Gaylord Texan Resort in Grapevine, TX. Each includes about three acres of rich interiorscapes under a massive glass roof. Prevost used Netafim products on both projects.

Prevost has found that using drip irrigation can lead to a lot more than just water savings. "You don't get the pooling of water on the ground or on plant leaves you can get with overhead spray irrigation," he said. "So you're creating an ideal growing environment for the plant, but an uninviting environment for pests and diseases. When you drastically reduce those issues, you can drastically reduce the amount of money and man-hours you have to spend dealing with them." 

The leader in drip technology

The initial installation and ongoing maintenance of Bella Collina's landscaping is performed by Austin Outdoor. Brian Wester is Austin Outdoor's Orlando District Manager overseeing the project. Wester said that Mitchel Walker and Michael Prevost specified Netafim on the project because both designers had strong track records using Netafim products. "Other companies make subsurface drip products, but Netafim is clearly the leader," said Wester. He pointed to Techline® CV technology as one example of how Netafim leads the way in designing drip products that work in the field. "We use the brand name 'Netafim' in place of the generic term 'drip irrigation' the way most people use 'Kleenex' to describe all tissues."

Wester said that ongoing management of the system helps his Austin Outdoor team conserve more and more water while keeping the turf and plants vibrant.

"By the time we finish the final dripperline installations, the entire system will be tied to an onsite weather station," said Wester. The system automatically will make minor adjustments based on precipitation and weather, further eliminating waste.



Brian Wester is Austin Outdoor's Orlando District Manager overseeing the Bella Collina landscape project.

"We're excited to see how beautiful Bella Collina already is and knowing how efficient the system will be for years to come."

– Brian Wester

"Because there is almost no waste with the drip system, you can really pinpoint how much water the plants are getting. Having everything automated and tied to the weather station takes full advantage of drip's inherent conservation benefits. We're excited to see how beautiful Bella Collina already is and knowing how efficient the system will be for years to come."

Wester also said that the system allows for occasional super-chlorinated flushes to keep the bacteria from the source water from damaging the irrigation dripperline, valves and other system components. "You can't filter everything out of the source water," he said. "So we built in a chlorine injection pump and 37 flush outlets that let us recapture the flush water without hurting the plants." Wester said the flushes keep the pipes and emitters clean and functioning properly.



This Bella Collina site map offers an idea of the grand scale of the project. The Nick Faldo-designed golf course juts westward while the home sites meander through the large island to the east. In all, Bella Collina comprises 1,900 acres with the golf course, homes, parks, common areas, retaining ponds, and a planned equestrian center.



SUCCESS

Tell-tale results

For its part in the Bella Collina project, Austin Outdoor was the 2007 Grand Winner of the PLANET (Professional Landcare Network) Award for Commercial Landscape Contracting. Wester acknowledged that the award was particularly meaningful because it did not just recognize water conservation, but the beauty and vibrancy of the landscape. And the results are motivating others to take advantage of drip irrigation too.

Wester said that seeing the Netafim system in action over time led some of the Bella Collina residents to install Netafim systems on their private properties. “If the plants and grass look this good and you can save water at the same time, why not?” said Wester, “I put a Netafim system in at my home too.”

Success is shared

As water conservation moves from a “nice goal” to a mandate – with lower water allotments facing landscape designers every day – drip irrigation continues to move to the forefront of irrigation options. At Bella Collina, a low water allotment was just one of many issues confronting the landscape team. Sandy soil, rolling terrain, bacteria in the water source, and lavish landscape goals all had to be accommodated to make Bella Collina the retreat it has become. Drip irrigation met every challenge and spelled success for the design team, the developer, the water management district and, of course, the people who live and play in Bella Collina. 💧

Why Drip?

Drip irrigation conserves water and illustrates your commitment to conserving water to clients, municipalities, and the media.

And that just starts a long list of benefits ...

- **Allows more landscaping with less water**
- **Improves plant growth and health**
- **Delivers directly to plant root zone**
- **Almost no loss to evaporation, wind or run-off**
- **Conforms to terrain, including curves and hills**
- **Delivers water at volume plants can uptake**
- **No surface pooling to encourage weeds or diseases**
- **Less liability (no slippery walkways)**
- **No water stains on tree trunks, buildings, fences, etc.**
- **No water damage associated with overhead spray**
- **Protected and hidden underground**



Drip reduces liability of slippery walkways and reduces water damage to trees and fences.

Keys to a Successful Drip System

While the specific design for your drip irrigation system will be determined by variables of your actual project site, the following are important recommendations that could be the difference between success and failure.



Netafim Techline® CV dripperline

Filtration of source water

All water sources have elements and life forms (from grit to bacteria) that can clog irrigation pipes or harm plants over time. You should test your source water so that an adequate filtration system can be designed as part of your drip system. Even if treated water from a municipality is your source, it should pass through your own filtration system before entering your irrigation pipes.

Occasional flushing

Even with an adequate filtration system, your system may need to be flushed occasionally with your source water. This will flush out most debris to keep the pipes and emitters clear. Sometimes it is necessary to flush the pipes with chemicals – such as chlorinated water – to eliminate any harm-causing agents that get through the filters. By designing flush outputs into the system, these occasional flushes can be a simple process, and you can recapture the flush water without harming plants.

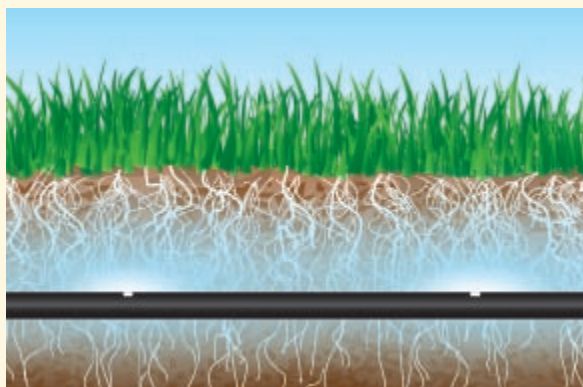
Avoiding root intrusion

Root intrusion is a problem that can be easily avoided. First, you should only use a dripperline product that is designed for subsurface installation, such as Netafim's Techline® CV with a root barrier. The emitters are designed to keep roots outside the pipe. Using appropriate run times and frequency also keep soil moist, so roots don't "search" for more water. Netafim also makes replaceable filters with a root-repelling chemical for additional protection.

Optimum watering schedule

Healthy plants and water conservation are mutual benefits of drip irrigation. But designing and installing the perfect drip system for your project site is just the start. Using the system properly is key to great results. It's important to operate the system for the appropriate run times and frequency for your soil conditions, weather conditions and plant needs. Automated control zones are highly recommended to help manage water use.

Using Subsurface Drip for Turf in Sandy Soil



As proven at Bella Collina, and at installations around the world, subsurface drip irrigation is an ideal solution for irrigating turf in sandy soil conditions – with an added benefit of being a better irrigation method than overhead spray on sloping and hilly terrains.

The capillary action within even sandy soil draws water in all directions (laterally, upward and downward) from the drip emitter. Hold a dry napkin in a glass of water, and you will see the same capillary action defy gravity and draw water upward within the napkin. When water is run for the proper duration and frequency, the root zone is evenly saturated so the grass is uniformly healthy on the surface. And with drip irrigation, the roots receive a lower volume of water over a longer period of time. This enables the roots to absorb much more of the water emitted than they can with overhead spray's "drench then dry" rotation.

Exact product specifications, installation guidelines and flow rates will need to be determined based on soil and other variables on the site.



The Worldwide Leader in Drip Irrigation



Since its inception in 1965, Netafim has pioneered drip irrigation advancements to help many industries achieve better results while conserving water. With more than nine billion Netafim drippers already installed around the globe, Netafim is the worldwide leader in drip irrigation technology. As the future of water availability has become one of the world's most asked questions, Netafim leads

the way with a definitive answer. Drip irrigation is the most efficient irrigation method available. Netafim products are used in agriculture, greenhouse and nursery operations, wastewater management, mining and, of course, landscape and turf. Today, Netafim is the premier manufacturer of drip irrigation technology for landscape designers.

Netafim drip irrigation systems are good for landscape designers and the customers they help ... and they are good for water conservation. As more and more landscape designers realize the tangible, proven benefits of drip irrigation, Netafim looks forward to being the one they can turn to for innovative products.

Netafim offers a complete systems approach, and partners with a network of trusted distributors and system installers. These partners ensure convenient access to Netafim products and provide complete system installation services. If you're considering drip irrigation, speak to your area Netafim distributor.

Netafim USA • www.netafimusa.com

Your Trusted Netafim Distributor: