

The Impossible GREEN

Golf courses, athletic fields, parks all benefit from ECS

By Ryan Peacock, Editor

There's no such thing as a perfect green. Especially from the superintendent's point of view.

A perfect green would have to water itself, kill its own weeds, insects, fungi and other pests, fertilize, mow itself to the perfect height, and drain water perfectly. It would also have to make every member's birdie putt go in every time.

Nope, there is no perfect green.

But a company in the Mountain

on Sierra Sage Golf Course in Reno, the 2.2-acre Damonte Ranch Regional High School athletic field in Reno, and is suited for use in parks, above-ground gardens, septic systems and more.

THE IMPOSSIBLE

Reno Green is a subsurface water-management system. When most people hear "subsurface" they think of drip irrigation and/or clogged drainage

tubes, but Jonas Sipaila, president, discoverer, developer and head cheerleader of the company, took the problems of drainage and irrigation systems of the past and simply eliminated them.

The ECS system will not clog, will not burst under pressure, is easy to flush, has no moving parts, reduces the need for electronics and wastes no water.

What's more, it doesn't make the kink-kink sound of irrigation sprinklers or spray Mr. Smith just as he starts his backswing.

HOW IT WORKS

Reno Green uses gravity for drainage and the concept of capillary rise for irrigation, eliminating the need for pressurized systems.

• DRAINAGE

Below the turf is a layer of gravel and sand that allows any excess water to drain into a series of pans—or cells—buried about 10 inches below the surface. These 4-foot by 4-foot cells are made of high density plastic and look like big cat litter boxes with a raised half pipe chamber running down the center.

The tube is a special non-clogging two-inch chamber that drains excess water away by gravity. The cells maintain a water level of a little over three inches, either from rain or from an irrigation source, and everything else is whisked away.

The drainage system can also be used in bunkers as it was at the Sonoma Golf Club in Sonoma, CA. The system was a \$400,000 project. Mike Kosak, Sonoma superintendent said, "I was very skeptical two years ago, but the

ECS CELL UNIT



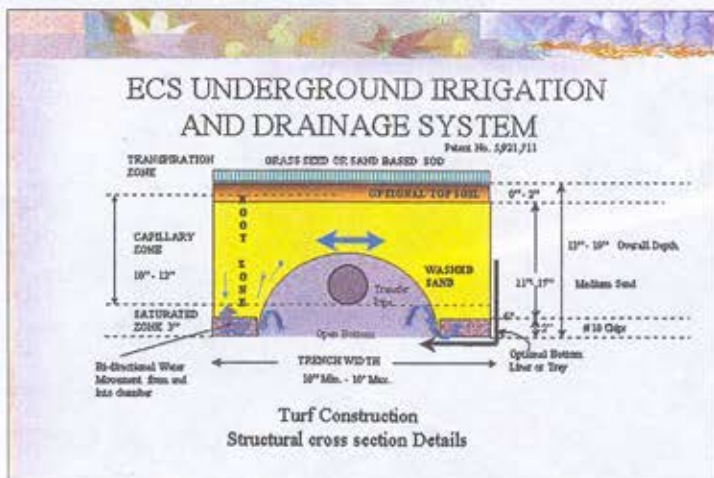
The ECS cell is the heart of the Reno Green system. It allows water to be stored under the surface and to be available in the root zone while keeping the top dry.

West has invented a method of making some of the impossible come true, at least from an irrigation and drainage standpoint.

Evaporative Control Systems Inc., a company in Reno, NV, has developed an irrigation system that offers zero percent water waste, at least 50 percent less water usage, no maintenance, blockage or repair, safe use of reclaimed water sources, and can drain 23 inches of rain in a 24-hour period.

What's more, the company has proven it.

The ECS system, patented and named Reno Green, has been installed



Water that comes into the system through a transfer pipe and into the bottom of the pan, slowly rises through the sand to feed the roots above it. The concept is called capillary rise and it makes grass greener without sprinklers.

WATER CONSERVATION

more I saw, the more convinced I was that this is a truly remarkable product. It can handle 10 times the water of traditional drainage systems."

• IRRIGATION

In areas where drought is the problem, not drainage, the Reno Green is even more impressive, thanks to its potential for water savings.

The sand layer acts a lot like a sponge, pulling the water from the cells upward toward the roots. It's a concept called capillary rise. The Reno Green system is built on it.

As the sand layer pulls water from the cells, the water level in the pans drops. When the water level in the last pan drops below two inches, a sensor turns on the water, at three or four gallons per minute, until all the chambers are filled. This system lets the turf decide how much water it wants and when it wants it.

With Reno Green, the grass waters itself without sprinklers, timers or constant checking. What's more, excess rainwater is stored in the cells and is recycled back to the turf, saving irriga-

tion water.

At Sierra Sage, ECS documented root zone growth of four inches in four weeks, which means the system also

General Construction Procedure

1) Survey the perimeter of the project green and/or collar to determine existing slope factors. A survey point every 10 feet along the circumference of green is sufficient.

2) Translate survey data to a scale drawing.

3) Determine slope lines from circumference; establish underground bench structure in five-foot increments with bench variations zero to six-inch rises.

4) Plan ECS structure on plans.

5) If sod (or a portion thereof) is to be reused, cut out sod in affected area and store onsite next to the project area. Cover and keep moist.

6) Excavate project area by removing about 12 inches of subsoil from surface.

7) Mark the highest bench line edge.

8) Excavate an additional three inches so the bottom of the bench is 15 inches below the original surface level along the marked bench line.

9) Excavate level toward the high end and develop a laser-leveled flat

bench in all directions. Vibra-tamp and smooth out completed bench surface.

10) Proceed to second bench and repeat process until all benches are completed and remove excess subsoil from the site.

11) A secondary bottom liner is added in porous soils.

12) Connect ECS pans and chambers with two-inch PVC pipe and fittings.

13) Fill pan interiors with two inches of No.10 gravel chips on both sides of installed ECS chambers (about 15 gallons in each chamber).

14) Cover the fill site with 18 inches of washed sand, roll and compact with foot pressure and vibra-tamper.

15) Charge system with water to assure continuity of flow throughout.

16) Final shaping, compacting and blending of sand surface for desired features.

17) Re-sod, top-dress seams with sand; or seed newly established surface.

encourages quick root zone development.

OTHER BENEFITS

Sierra Sage superintendent Tom Steinberg will be comparing water and chemical usage from past years with what he uses with the Reno Green system. He anticipates saving money and resources not just with water, but also with fertilizers.

"We anticipate being able to use less of everything just because we have such a healthy product," Steinberg said. "And the pans will hold some of the fertilizer—at least 90 percent. I'm real happy with what we've done."

The entire construction process takes only about two weeks from start to finish using a crew of five to ten workers. That means it's possible to renovate 18 greens in one season. The company estimates that no more than three temporary greens would need to be in place at a time, enabling the course to stay open while the greens are being renovated.

One of the tests ECS has run on their system is the drainage test. Two adjacent greens, one with Reno Green, the other without, were pelted with water. After they had received four inches of "rain" in four hours, a lake formed in the middle of the green without the system. The Reno Green green was playable and mowable in just five minutes.



Aggressive Root Growth Right From Seed

15"

Bent Grass Roots, 4 months after seeding

Minimal growth into saturated zone of fine gravel

Roots reach lengths of up to 10 inches in just four months after seeding with the Reno Green system.

Reno Green gets rid of sodium buildup on turf because the sodium stays dissolved under the surface so it can be flushed easier.

The system also makes an aerobic root zone, a drier surface, no soil compaction and the turf is less prone to disease and weeds.

HOW MUCH?

Here's the nitty-gritty about the price of the system: it costs about 20 percent more to put the Reno Green system in than it does other systems. That has to be expected for a product that can do the impossible. But the company is quick to point out the water and chemical savings, the fact that it can be installed in-house and the time and energy saved by having an automatic, self-watering green.

The green at Sierra Sage, for example, took five workers 12 days to install. They used a backhoe, transit, vibra-tamper, sand pro shaper and benching tools. Total material used on the 4,425-sq.-ft. green was 385 tons of washed sand, 11 tons of fine No.10 gravel and 177 ECS cells. Four weeks later, with four-inch roots, the green was ready for play.

DROUGHT

With the dearth of rain the West has had in the past five years, any product that comes along to reduce water use while still keeping the course playable deserves some attention. The Reno Green can save water, which, during a drought, is more valuable than money.

A 50 percent decrease in water used can mean the course—or athletic field, or park, or landscaping—can be green twice as long. What owner, municipality, county, or club membership wouldn't want that?

Contact (877) 608-2615 or visit www.ecsgreen.com.



**SAND BASED
SOD
ROOT
GROWTH
IN ONLY
3 MONTHS**

Full, vibrant roots are also possible using sand-based sod as the starter turf. This picture was taken three months after sodding.

