

% COST COMPARISON

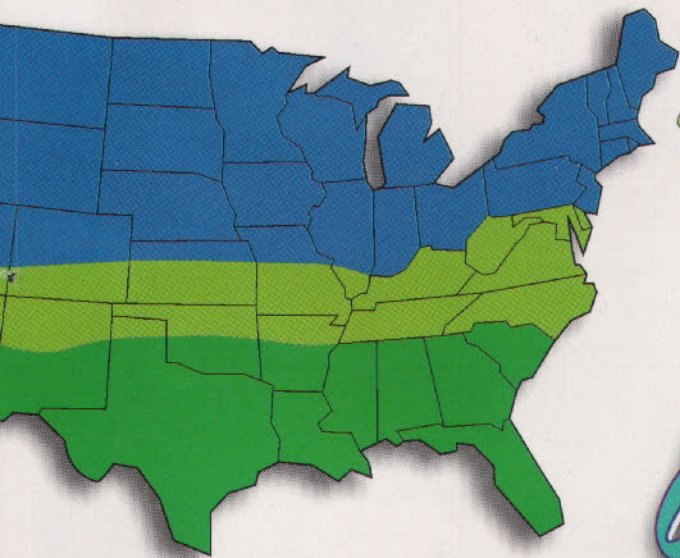
Material Planting	Rate	% Cost of Riviera
Riviera	2 lb./1000 sq.ft.	100%
*Bermuda Sprigs	500 bushel/acre	102%
*Bermuda Sod	Solid	653%
Cool Season Sod	Solid (Fescue)	800%
Zoysia Seed	2lb./1000 sq.ft.	135%
Zoysia Sod	Solid	960%

*High Quality

reduce the need for and cost of applying fungicides. And its excellent drought tolerance can substantially reduce irrigation costs.

IMMEDIATE AND CONTINUAL SAVINGS

The cost of seeding Riviera is less than either sprigs or sod of current industry standard bermudagrass varieties. In fact, the cost of seeding with Riviera is estimated to be less than 1/6th the cost of using sod.



"Riviera's superior wear tolerance and recuperative ability have given us a quality training surface all year long, helping take the Lobos to the NCAA title game for the first time in history."

—Brent Neighbor

Sports Field and Grounds Manager,
University of New Mexico



Arkansas Baseball Stadium

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—Pat Berger

Arkansas Athletic Dept.,
Sports Turf Manager Mens Athletics



RFK Baseball Stadium, Washington, DC

DID YOU KNOW?

Riviera may be established and/or renovated at a much reduced cost both in dollars and effort...while also providing as safe and attractive a playing surface as is possible under high traffic conditions.

"Wear tolerance of seeded and vegetatively propagated bermudagrasses under simulated athletic traffic,"

T.A. Bayrer, University of Kentucky (February 2006)



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FACILITY & OPERATIONS

Continued from page 28

	Existing Soil Field	New Soil Field	New Sand-Based Field	New Synthetic Turf Field
Initial Construction	0	\$20,000 - \$200,000	\$350,000 - \$1,000,000	\$600,000 - \$900,000
Annual Maintenance Cost	\$15,000* - \$50,000	\$15,000 - \$50,000	\$15,000 - \$50,000	\$5,000 - \$15,000
Remedial/ Major Repairs	\$0 - \$50,000	\$0 - \$50,000	\$0 - \$150,000	\$0 - \$10,000
Ten Year Maintenance Cost	\$150,000 - \$550,000	\$150,000 - \$500,000	\$150,000 - \$650,000	\$50,000 - \$160,000
Ten Year Cost	\$150,000 - \$550,000	\$170,000 - \$750,000	\$400,000 - \$1,650,000	\$650,000 - \$1,060,000
Cost per Year	\$15,000 - \$55,000	\$17,000 - \$75,000	\$40,000 - \$165,000	\$65,000 - \$106,000
Events per Year	60 - 120	60 - 120	60-120	200 - 365**
Cost per Event	\$125 - \$916	\$141 - \$1,250	\$345 - \$2,750	\$178 - \$530

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vent player injury. If the fabric is stretched or bulging, it may be possible to re-stretch it or, even to turn it upside down on the framework; however, this is a fairly difficult job requiring heavy equipment, more akin to renovation than to maintenance.

Inspect cable ties and hog rings to insure that they are securely fastened and reattach them to the bottom tension wire as necessary. Check all post caps, hardware and fasteners. Repair or replace missing or damaged items.

Examine gates, hinges and latches. Clean and lubricate them so that gates swing easily and the latches operate smoothly. If the gate is out of plumb, adjust and rehang it.

Observe the base of all fence posts at the footings. Check for deterioration and patch where necessary.

Landscape maintenance

Regularly trim the grass and landscaping around the field for a clean appearance and to ensure proper drainage. Weeds left growing around the perimeter will invade the surface at its edges. A 2 x 5-foot border around the perimeter should be left free of all vegetation to prevent damage.

Tree roots that extend under the field should be neutralized or removed prior to construction. Where removing tree roots and vegetation is not practical, root barriers sometimes are used. Even when nearby roots are removed prior to construction, they can travel great distances, especially where fields are regularly watered. Some tree species are more likely to be troublesome than others; white pines are especially difficult.

Where new landscape materials are used on site, use native plants if possible, and choose additional plants which are drought resistant, low maintenance, disease and pest resistant and hardy. Avoid invasive species.

Use mulch on plantings to conserve soil moisture, minimize growth of weeds, reduce maintenance, restore fertility and reduce the need for fertilizers. If possible, compost grass clippings, plant debris and fallen leaves for use as a soil amendment in place of inorganic fertilizers or peat moss (a non-renewable resource).

Rental fees

One argument often used to support the installation of synthetic turf fields is that because the field can be used for many more events each

year, it can be rented out and rental fees will offset the cost of installation. When calculating the potential income from rental fees, be certain to offset that income with the cost of set up and clean-up, painting and cleaning markings, security, staffing, and use of lights and similar costs for a realistic picture of the net benefit of renting. Be certain to read your warranty, carefully, as well. Warranties may have limitations based on specific use, amount of use or other considerations.

Maintenance costs

The chart on the page 32 presents typical cost ranges. Because of the number of variables, a prospective owner should compare costs based on actual and intended use and maintenance practice. This chart does not consider the cost of irrigation.

*According to professional turf managers, the cost to maintain a natural grass field in optimal condition is approximately \$50,000 per year. However, most high schools spend

more in the range of \$15,000 per year; many spend much less.

** While theoretically, a synthetic turf field has unlimited use, it is unlikely that it will host more than 365 events per year and, likely, it will host many fewer events. Fewer events will increase the cost per event, while a greater number will increase maintenance costs and, therefore, cost per event.

Typical maintenance schedules

The schedules on page 25 and 26 are presented only for information as typical examples. Maintenance schedules depend on system, climate, use and other factors. Failure to follow your manufacturer's guidelines may void your warranty. ■

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Study debunks staph bacteria scare in synthetic turf

Sports trainers and coaches are concerned about outbreaks of an antibiotic-resistant staph bacterium that some people have associated with synthetic turf fields. But a study by researchers in Penn State's College of Agricultural Sciences should help put those concerns to rest.

Conducted by the university's Center for Turfgrass Science, the study found no trace of *Staphylococcus aureus* bacterium in any of the 20 infilled synthetic turf fields tested at various locations in Pennsylvania last year.

"These infilled systems are not a hospitable environment for micro-

bial activity," said study author Andy McNitt, associate professor of soil science. "They tend to be dry and exposed to outdoor temperatures, which fluctuate rapidly. Plus, the infill media itself (ground-up tires) contains zinc and sulfur, both of which are known to inhibit microbial growth. Considering the temperature range for growth of *S. aureus* is 7-48 degrees Celsius, we didn't expect to find this bacterium in fields exposed to sunlight, since the temperatures on these fields far exceed 48 degrees frequently."

Staphylococcus aureus is a common bacterium that often lives harmlessly on the skin or in the nose. When introduced into the body through a cut or medical incision, it can cause anything from minor



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skin lesions to life-threatening bloodstream infections, pneumonia or organ damage. A strain of the bacterium, MRSA (methicillin-resistant staphylococcus aureus), has developed resistance to the antibiotic (synthetic penicillin) typically used to treat it and is becoming a major concern for sports teams with synthetic turf fields. The strain has also become one of the most common causes of skin infections requiring emergency room treatment nationally.

"Currently, there are between 700 and 800 of these fields being installed annually in the country, and there's been quite a scare about turf and MRSA," McNitt said. "Some pro football players came down with it, and a Pennsylvania high school team has had 13 players sickened by it over the past 2 years. So this is an important finding."

McNitt said the center's study didn't differentiate between MRSA and the nonresistant strain because "they are the same bacterium. It's just that some of the bacteria have devel-

oped resistance to antibiotics. We didn't differentiate, as we didn't find any staph, resistant or otherwise, in the synthetic turf."

The Penn State study also found low overall microbial populations in the synthetic turf systems. "The microbe population of natural turfgrass far exceeds anything we've found in the infill systems," McNitt said. "In fact, a number of the infill systems had zero living microbes in the sample at the time of testing."

Even though temperatures of indoor fields would not be expected to fluctuate nearly as much as outdoor fields, he said, the microbe population of the indoor fields tended to be lower than outdoor fields.

"That was unexpected," McNitt said. "We really expected to see higher microbe populations indoors and purposely tested the fields during periods of high use and humidity. While we are unsure as to why the indoor fields had lower microbe counts, it could be due to the almost complete lack of moisture."

The researchers did find *S. aureus* on other

surfaces (blocking pads, weight equipment, stretching tables and used towels), as well as on the hands of five randomly tested passersby. The bottom line, McNitt said, is that while everyone should be concerned about the spread of bacteria and the cleanliness of equipment and other surfaces that players contact, infilled synthetic turf systems do not appear to be a breeding ground for microbes generally.

"Some other studies indicate that a player playing on synthetic turf may acquire more skin abrasions due to the abrasiveness of the surface," McNitt said. "Thus, they have more entry points for the staph, but they're not getting it from the field – they're picking it up in the locker room or somewhere else. One study shows that players who shave their ankles prior to taping up, for instance, also have a greater incidence of staph because the shaving creates little nicks for infection to enter."

A preliminary report can be found at <http://cropsoil.psu.edu/mcnitt/microbial/index.cfm> ■

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Buffalo Turbine began manufacturing commercial debris blowers in 1996, starting with its model KB turbine blower. Today, sports field managers, golf course superintendents, racetrack owners, landscapers, and others use this product. For example, ten units have been used at the last eight Super Bowls to help prepare the fields as well as cleaning up at halftime and post-game.

A special modified Military version of Model KB is successfully contributing to saving lives in Iraq, according to Paul Syracuse, general manager at Buffalo Turbine. "Our brave soldiers have named the BT-KBSML unit 'The CYCLONE'," says Syracuse.

The blower units are mounted to the front of the vehicles to provide an extra safety margin to

the occupants in the case of an IED (Improvised Explosive Device) explosion. The units can trip the electronic eye, infrared and other various crude triggering devices that are used by the enemy. The units are used to clear off the roadside garbage because the enemy has a tendency to hide their IEDs within the garbage. The Blowers have triggered the IEDs as well, protecting vehicles and soldiers.

"Being mounted to the front bumper of an RG31 or related vehicle, the Cyclone blower will provide additional protection to the cab area. The explosion and shrapnel will travel towards the blower unit instead of into the side of

the vehicle," says Syracuse. "The infra red sensors mounted to an IED may also be triggered by the path of the sand being blown by the Cyclone. Nothing is fool proof but saving just one life makes a project very rewarding." ■



How the Complex of the Year's irrigation system works



ocated in Surprise, AZ the Surprise Recreation Campus (SRC) boasts 200-plus acres of wellness opportunity for the community while serving as the spring training home of Major League Baseball's Texas Rangers and Kansas City Royals.

Developed in cooperation with senior engineer Bill McBride, Charlotte Engineering Sports Group, HOK Sport, Mark Coronado, and Joe Kennedy – along with a host of contractors, consultants, suppliers, and representatives from the City of Surprise – SRC offers 80 acres of multi-purpose-use turf, 10 acres of lawn, and more than eight acres of perimeter landscaping, creating incredible year-round challenges in regard to turf maintenance and playability.

“We can practice 18 teams on nine fields in two hours each night, enabling us to accommodate 36 different teams in one four-hour period,” said Mark Coronado, director of SRC. “We can also host 108

games in six hours on Saturday, all in one location, making it easier for parents to juggle multiple-sport activities.”

To manage such rigorous activity, SRC was designed with supreme versatility in mind; cloverleaf fields of continuous turf provide complete flexibility in accommodating virtually any sport, from baseball to soccer. Foul posts within Billy Parker Field were expanded to 350 feet, as opposed to the typical 330-335 feet, enabling placement of a complete football field in the outfield without breaching the infield dirt.

“Our fields are being used every day, throughout the year, with the exception of two weeks in April when we shut down to renovate the field,” said Joe Kennedy III, baseball maintenance manager for SRC.

Maintaining such high levels of use year-round proves difficult in managing proper watering and maintenance schedules. With a full-time crew of 16 staff members, and two part-time staffers, Kennedy has just concluded SRC's fifth spring training season, which typically draws 160,000 fans.

IRRIGATION & DRAINAGE

A sign posted in the grounds crew locker room serves as a constant reminder of the many challenges faced in managing multi-use facilities: "Groundskeeping is not a job; it's an adventure."

Kennedy joined SRC a full year before the groundbreaking of the Campus to supervise the complete construction of Billy Parker Field and surrounding sports fields. For six years, Kennedy has maintained oversight of turf management operations for the 125 acres located west of Bullard Avenue, which includes 55 acres of Bullseye Bermuda "BOB" sod turf, the same turf used at Bank One Ballpark in Phoenix.

"The whole Campus was constructed with conservation in mind," Kennedy said. "Nothing is wasted. Every dollar we put into our fields is directly used."

SRC can tap into multiple water sources, all accessible through one simple lever switch: reclaimed water, treated water from the City of Surprise, or water from Maricopa County. To help preserve the City's limited drinking water supply, non-potable water, and an on-site lake that doubles as an urban fishing lake, is used to irrigate the Campus.

A 24-inch mainline connects the lake, which draws water from Lake Pleasant via the Maricopa County Water Canal, to the massive

pump house and fertigation system, supplying the entire Campus with irrigation. Proper aeration and an artificial reef comprised of concrete tubes ensures optimal conditions for the lake's catfish and bass inhabitants, allowing SRC staff to safely draw one foot of water per night to irrigate the sports fields.

SRC's irrigation system is comprised mainly of Hunter products, supplied by Ewing Irrigation. Hunter's Surveyor central irrigation control system with supporting VSX field controllers enables Kennedy and crew to control water management and scheduling for the entire Campus.

To combat brief watering windows, Kennedy



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IRRIGATION & DRAINAGE

uses Hunter I-40-ON Rotors, or "Opposing Nozzle," in large turf areas, delivering water accurately up to 70 feet, while I-20 Ultra Rotors are used in smaller areas. Pressure-regulated Hunter ICV Filter Sentry valves guard against dirt and debris.

"Primary and secondary nozzles positioned on opposite sides of the nozzle turret enable simultaneous mid-range and close-in coverage," explained Brad Godaire, sales representative for Hunter Industries. "This design also helps increase wind-resistance."

Kennedy notes that the initial construction cost of using only the highest quality products was quickly recouped due to SRC's water savings. Unlike other complexes that can use from 1-2 million gallons of water per day, which amounts to approximately \$200,000 per year, SRC spends around \$35,000 annually, using an average of just 200,000-400,000 gallons per day.

"The foresight exhibited by the City of Surprise, coupled with Joe Kennedy's desire to have the most technologically advanced main-

tenance practices possible for a sports facility, was ultimately responsible for this outcome," said Mike Thompson, golf & sports field construction specialist for Ewing.

Kennedy partnered with Texas A&M, Simplot, and the University of Arizona's Cooperative Extension to address microbe development, soil, and drainage issues. He uses only organic fertilizers to produce durable turf that holds nutrients better than natural soil, and maintains a private sod farm located on-site just outside of the Royals' practice field for those quick-fix moments.

"We knew we would be constantly flushing salts out of the system due to the water's high alkalinity, pH, and salt content, so it was imperative that we create an excellent drainage system," Kennedy said.

Retentions built throughout the Campus are designed to capture massive amounts of surface water. Each playing field is equipped with a drainage system that can percolate 16-22 inches of water per hour. Collected water

filters into a 60-foot deep dry well and permeates into the ground.

"Our drainage system worked almost too well; I began to starve my grass," said Kennedy, who uses an elaborate fertigation system infused with a special "top secret" blend of elements and additives to keep his turf in supreme condition.

His laborious efforts haven't gone unrewarded; the Surprise Recreation Campus recently earned its third consecutive title as 'Professional Sports Complex of the Year' by the Sports Turf Managers Association (see page 46).

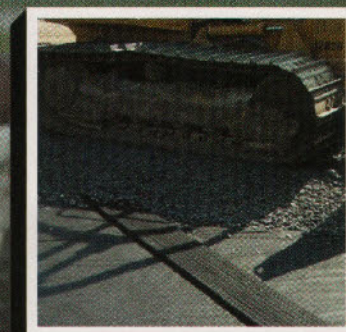
At the end of the day, Kennedy clearly identifies the major contributors to his success. "Our irrigation system, intricate drainage system, and our attention to detail in regard to conservation and performance, is what truly sets Surprise Recreation Campus apart from other complexes." ■

Lacy Hyland specializes in education and outreach for Ewing Irrigation Products.

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