

(which should be previously agreed upon) that can be monitored during harvest would include:

- Sod harvested from a previously agreed upon field
- Sod thickness, including uniformity of thickness throughout the harvest
- Soil moisture level
- Length of rolls (for big roll harvests)
- Correct amount harvested
- Sod properly covered for transport to the site

Quality control during sod transplanting is just as important as when harvesting. The best quality sod can be ruined if care is not taken during transplanting. The following should occur throughout the planting process:

- Avoid disturbing the soil grade with equipment or other field activity.
- Prevent stretching of sod as much as possible when sod is moved into place.
- Ensure that seams are tight.
- Provide immediate irrigation if conditions cause stress to newly planted sod.
- Protect sod from heat or drying wind if it can not be planted immediately.

### Post-Planting Care

New sod must be carefully watched for signs of stress following planting. Watering practices suitable for the established part of the field may not be suitable for new

sod—especially under hot, dry conditions. The shallow root zone (even with thick-cut sod) of new sod will dry out more quickly than the more deeply rooted, established turf. Some hand watering will often be the rule following sod planting. Deep watering is not an effective irrigation technique for new sod.

Light to moderately heavy rolling will generally be necessary to produce a uniformly smooth surface, although intensive rolling should be avoided.

Mowing should begin as soon as the new sod has grown enough to require mowing. The top of the plant will grow even though the sod may not have begun rooting into the underlying soil. Of course, the sod should be dry enough prior to mowing to prevent mower rutting from occurring.

Fertilization may be performed if the rest of the field requires it. Some fertilization may be used to cause the newly sodded areas to blend in with the established turf. The use of foliar iron applications to either the new sod or the surrounding turf can help the new sod to blend in visually.

Long-term care of the sodded area will depend on whether or not it is intended to be a permanent installation. If the soils of the sod and field root zone are closely matched, then the sod could be expected to root normally over time. If the root zone and sod soils are mismatched (clay over sand, for example), the sod installation might be viewed as a temporary fix which will be replaced at a

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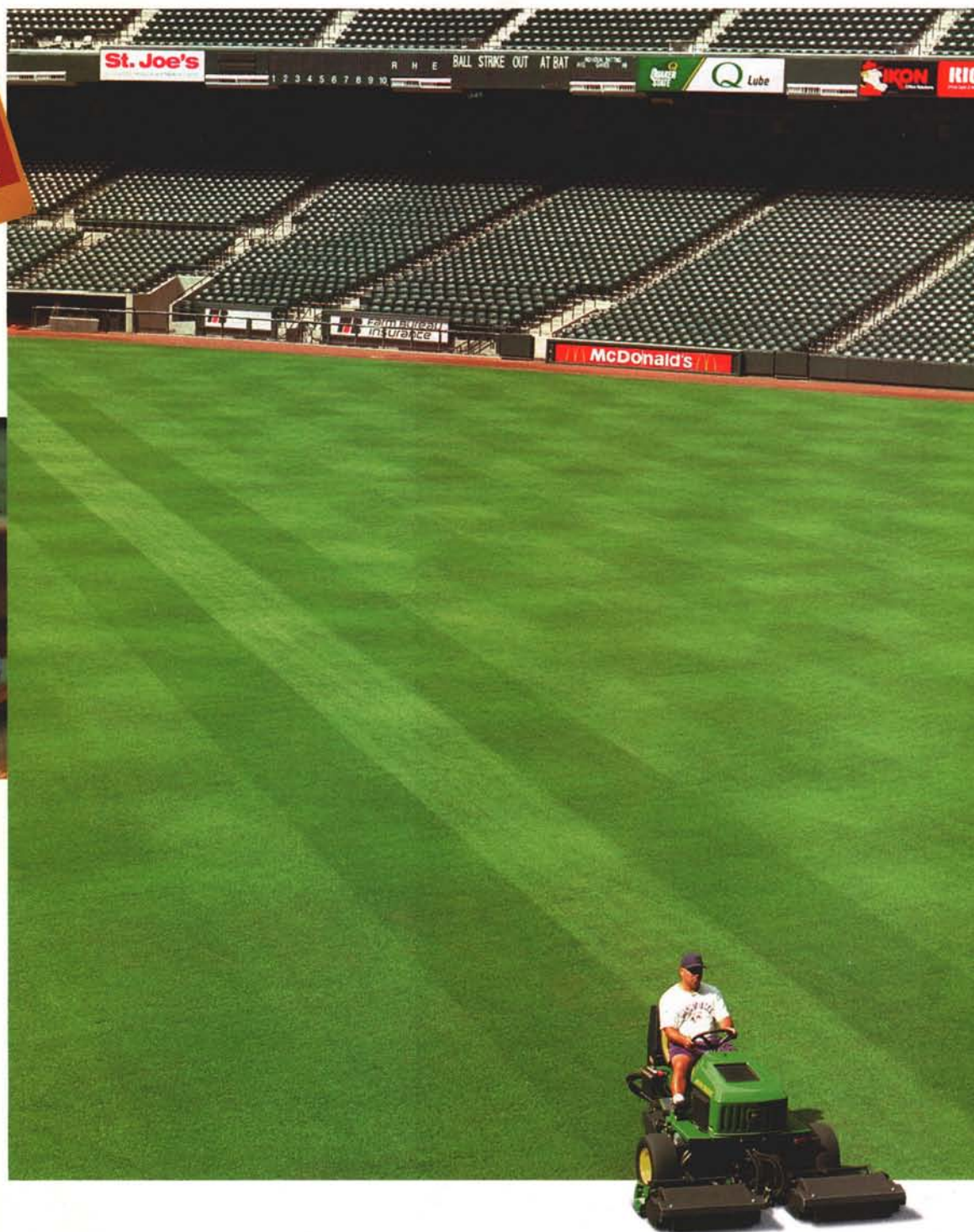
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**Grant Trenbeath, head groundskeeper for the Arizona Diamondbacks. To the right, Trenbeath mows the outfield with the John Deere 2653A Utility Mower.**



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"This ballpark is unique to anything that's been done before," says Grant Trenbeath, head groundskeeper for the Arizona Diamondbacks Baseball Club, major league baseball's newest team. Like the Diamondbacks, Trenbeath was in his inaugural season as a major league groundskeeper during 1998. And it was a learning experience, to say the least.

"It's a world inside itself," observes Trenbeath about the Bank One Ballpark. "The roof, the air conditioning, the shade line, not to mention the heat factor. Also the newness of the park. There's a maturity process that goes on and it takes a certain amount of time to establish that."

To help bring a rookie field up to major league standards, Trenbeath relied on a proven veteran. "I've worked with John Deere equipment in the past, so when I was approached about using John Deere, it had my full support."

***The John Deere 1200A Field Rake and the 220A Walk-Behind Mower are mainstays in the Arizona infield.***



something, it's much higher quality. Prime example is the Aercore 800. I've messed around with other aerators and that's the Cadillac." But according to Trenbeath, it takes

more than equipment to make a winner. "Most groundkeepers will tell you the equipment is only as good as the service. And John Deere to me is the best service-wise. And that's peace of mind."

"You can go up and down our line of equipment – the 1200A Field Rake, the 2653 Utility Mower, the 1800 Utility Vehicle, the 220A Walk-Behind Mowers – all of them are mainstays here at Bank One."

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later time with either soil and seed or a more compatible sod. Alternatively, a clay sod planted on a sandy soil could be cultivated and topdressed to provide channels for water movement and root growth into the underlying sand root zone.

### The Big Question: When Can the Field Be Used

The users of fields are almost always anxious to begin play again as soon as possible. How do you answer the question, "When can we play on this field?" The answer is determined by the age and species of sod, the thickness of the sod and if it is slab or big-roll sod. Generally speaking, the more mature the sod is and the heavier it is, the sooner it can be played on. When planning field repair, it is essential for the turf manager to have a clear understanding of how quickly play must begin again on the field. This knowledge should help determine the type of sod that will be used for repairs. Some general guidelines follow, based on sod characteristics:

- Thick-cut (1.5-2 inches), big-roll sod that is sufficiently mature can literally be played on immediately after it is planted.
- Conventional thickness sod (0.25-0.5 inches) should be allowed to root for 60-90 days before play begins.
- The rate of rooting (which determines stability underfoot) is affected by time of year, soil type, compaction level and cultural practices.

- Generally speaking, sod planted on heavier (higher clay content) soil will root more quickly and provide better stability than sod planted on a sand root zone. A more mature sod, with a well-developed thatch/mat layer, is more resistant to traffic effects than a younger sod.

The benefits of using thick-cut, big-roll sod for repairing a high use field are obvious. The ability to place a field back in use nearly immediately after repair can justify the substantially higher cost of using this type of sod.

### Alternatives to "Conventional" Sod

Just as big roll sod production was an innovation a few years ago, other alternatives to traditional sod exist today. Washed sod, soilless sod, sod grown in moveable trays, sod produced with integrated stabilizing materials—all of these innovations should be considered by the turf manager for use in field repair. Depending upon the situation, these new types of sod may be a better solution for field repair than conventional sod.

### Failure to Plan Is a Plan for Failure

This often heard adage applies well to the topic of field repair. The well-prepared sports turf manager will have an emergency plan in place for field repair that:

- Considers sources and types of available sod
- Details labor and material resources
- Outlines comprehensive quality control procedures for the sod farm and on site
- Provides all interested parties with realistic timelines for repair and when the field can be used again

Most importantly, the details of the plan are communicated to everyone with a vested interest in the final outcome.



*Dr. Tony Koski is assistant professor/extension with the Horticulture Department of Colorado State University, Fort Collins, Colo. He's an STMA board member, chair of the Education Committee and member of the Certification Committee.*

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# UTILITY VEHICLES APPEAL *to the* MASSES

## Versatile and Durable, Utility Vehicles Are Being Spotted Everywhere

by Robert M. Laveau

Although most turf professionals know that "UV" is the common abbreviation for utility vehicle, it would be no surprise if it also stood for "Unmatched Versatility." Think about it—not too many pieces of equipment can go from conditioning sports fields to putting out fires to transporting injured athletes from the field. By combining compact frames, excellent maneuverability and a variety of attachments, utility vehicles have an impressive repertoire that make them coveted by everyone from golf course superintendents to movie producers.

Utility vehicles have so many applications simply because there are a number of design features and attachment options that make them nothing less than necessary for the turf industry and beyond. These special features give consumers the opportunity to choose from many different models of UVs to find the right vehicle for their specific needs. Incorporate a variety of attachments like utility carts, tool holders, aerators and medical units, to name a few, and the UV can be completely customized.

Buyers of utility vehicles can be as diverse as the vehicles themselves. The numerous designs and attachments for UVs make it easy to understand why professionals like golf course and ball field superintendents, farmers and landscape contractors want these machines. Manufacturers of utility vehicles are now producing electric utility vehicle models for golf course personnel who need to move quietly around the course or grounds crews who need quiet vehicles for work on a college campus. Equipment like high flotation tires ensure minimal ground compaction when driving on sensitive turf. These features appeal to sports turf managers and grounds maintenance crews, while attachments like seeders and sprayers are popular with farmers.

"The consumer base for utility vehicles has grown significantly



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in the past few years thanks to the creativity of engineers and designers who have developed models for specific industry needs," said Dave Larson, general manager, John Deere Vehicle Group. "We are concentrating on developing models and attachments that make [utility vehicles] a necessity not only in the turf world, but also in the eyes of commercial professionals and the general public."


To truly personalize a utility vehicle and diversify its applications, owners have invested in the many available attachments. Here are a few of the options manufacturers are offering:

- Utility carts
- Tool holders
- Racks with pins and key locks
- Front blades
- Sprayers
- Seeders
- Top dressers
- Aerators
- Line markers for athletic fields
- Ball field and drag finishers
- Water rangers
- Medical units
- LP gas conversion kits

STMA President Rich Moffitt, director of grounds and materials management for St. Louis University, has seven UVs in his equipment arsenal, and finds them invaluable for their time saving capabilities.

"Our utility vehicles are very important for getting crew members around," Moffitt said. "Instead of walking, they can get where they need to be by driving, which is so much faster and allows us to get so much more done."

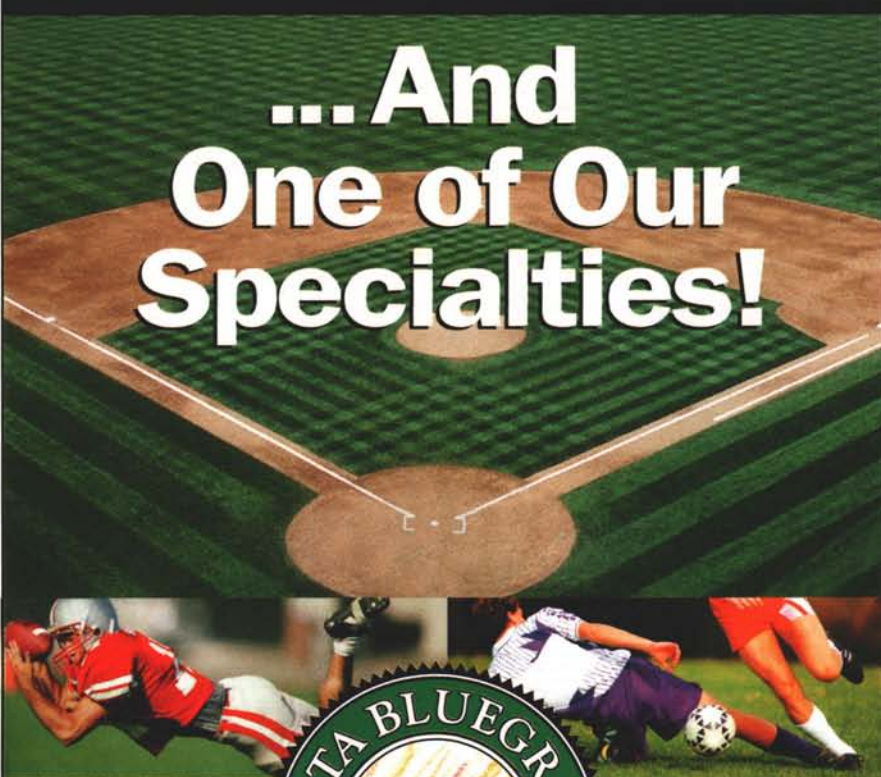
Moffitt said of his seven UVs, four are low-end vehicles used mainly for transportation, while three are heavy-duty commercial vehicles, customized with top dressers, aerators, sprayers and other pieces of equipment. While a new UV, equipped with optional pieces of equipment, might cost up to \$20,000, used vehicles for transporting crew and equipment can be purchased for around \$2,000, according to Moffitt.

The utility vehicle market is growing rapidly, thanks to the manufacturers who are foreseeing the needs of the consumers. This market is expected to continue to grow as new models and attachments are introduced, making the uses for a UV even more numerous. 


*Robert Laveau is the marketing manager for John Deere's Vehicle Group.*

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# Graphic Design

## The Secrets to Outstanding Field Painting

by Bob Milano Jr.

Every Sunday during the fall, you turn on your television set and up pops one beautiful NFL stadium field after another. It's not just that the turf is a rich green color and perfectly manicured, but the striping and logos look great. You might initially think that it is a result of money. Yes, the financial resources at major stadiums (staff, equipment and specialized materials) do play a key role, but the graphic design of the field as a unit and each logo play just as important a role in achieving the results we see on game day.

Granted, not all of us can afford to hire an artist to evaluate design alternatives and devise specialized event logos like the NFL can, but we must consider the graphics as an integral part of the work we do. A top-notch field requires three elements: outstanding turf/soil surfaces, exceptional application of the paint and a sharp graphics design.

Before we apply the first gallon of paint to the beautiful turf canvas we have nurtured for months, we must have carefully planned and methodically decided upon the exact graphics for the event. No matter how exacting we are with the layout or how carefully we apply the paint, we will surely be disappointed with the overall appearance of the field if the graphic presentation is not well planned.

### Graphic Design Basics

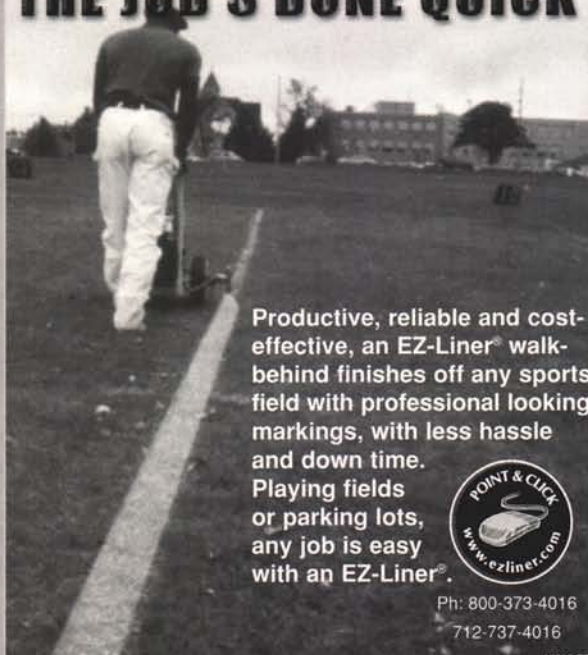
Graphic design is everywhere in our daily lives; on the cereal boxes we read in the morning, on the bumper stickers we view on our way to work and on the lawn mowers with which we manicure the turf.

We have spent years being educated and trained in the craft and art of groundskeeping; so have graphic designers who toil over every minor detail of a design. In order to understand their world, and to those of us lucky enough to work with a designer in our stadiums and on our fields, it is important to understand their terminology. A basic knowledge of graphic design will assist us in evaluating and understanding what looks good and why, as well as what doesn't work:


- **Theme**—An overriding mood or feeling for the graphic design
- **Foreground**—Elements that appear to the front and have greater emphasis
- **Background**—Elements that appear to the back and have less emphasis
- **Scale**—The relative size of an object compared to other objects or the whole design

- **Negative space**—The open or unused area of a graphic in relation to the used areas
- **Font**—The typestyle of a letter or number
- **Stroke**—The width of a symbol's components
- **Visual Tension**—The placement of an object in an unexpected or unbalanced way to increase importance
- **Hierarchy of Lines**—The relative visual strength and importance of a line compared to another based on its thickness (stroke), color or type
- **Visual Balance**—The elements, regardless of the size and spacing, provide uniformity and rhythm to the design.

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Groundskeepers need to carefully plan the graphic design of their field in order to create sharp, attractive markings and logos.

Field painting serves a practical function by improving the visual perception for athletes, spectators and television viewers.

### The Language of Lines

All of the playing fields we prepare involve lines to define and regulate the competition. These lines form the framework and basic structure for the field and must be graphically evaluated before any decorative markings or logos are considered. In addition to the lines, we need to under-

stand the relative importance of the lines for each sport. For example, the goal line in football is a very important marking and thus should be emphasized in the design.

An easy way to understand this concept is to compare a field layout to an architectural drawing. Architects and engineers use varying line thickness and styles to repre-



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