

Three Elements to lighting your sports field

By Jeff Rogers

Playing under lights turns a game into an event. Lights focus attention on the action, players get more excited, and bleachers swell with fans. As the lights come up, an ordinary field becomes a stage capable of fulfilling dreams.

When planning a sports-lighting project, three design elements must be understood: lighting, structural, and electrical.

Lighting

Sports lighting must meet players' needs, so should provide a specified quantity and quality of light on the field. The required quantity (level) of light is determined by the players' skill level, the speed and size of the ball, the number of spectators, and any television requirements.

Manufacturers should provide calculations stating both initial and maintained light levels. Initial light levels state the light produced when the system is new, while maintained gives the light to be maintained on the field throughout the system's life.

Your project's specifications should also require uniformity, or evenness, of light on the field. Poor uniformity is a safety hazard for players, and unpleasant for spectators. To ensure smoothness, ideal lighting design provides no variation in light greater than one percent per foot.

Manufacturers use computer-generated models called point-by-points. These models are used to evaluate the quantity and quality of proposed lighting levels. It is extremely important that each manufacturer determine how many fixtures are needed to achieve desired light levels, but don't base your decision on a designated number of fixtures. All 1,500-watt metal halide lamps produce the same amount of light. However, superior reflector design allows some manufacturers to use light more efficiently. By controlling spill, or wasted light, and redirecting it onto the field, the second manufacturer has created more efficient fixtures, as well as eliminated environmental or residential concerns that derail many lighting projects.

Structure

The two structural components of a lighting system are luminaire assemblies and poles. Each component affects the initial cost, life-cycle cost, safety, and quality of a project. The luminaire assembly, consisting of a lamp, reflector, ballast mounting, cross-arm, and mounting hardware, should be engineered as a single unit with known structural strengths to ensure the quality of maintained light on the field. The luminaire assembly must be sufficient to support fixtures, weighing up to 60 lbs., or the original aiming pattern of the fixtures may be altered, losing proper quantity and uniformity of light. When aiming patterns are disturbed, the only way to restore light levels is to re-aim fixtures, a costly and time-consuming process.

Aiming at the time of installation is also costly, and can be avoided. Technology exists allowing manufacturers to pre-aim fixtures in the factory and eliminate the initial aiming and re-aiming problems that often accompany installation.

Three types of poles are commonly used in sports lighting installations—wood, concrete and steel. Wood poles, usually the least expensive to purchase and install, have high maintenance requirements that devour initial savings. Exposure to rain, wind and even sun causes wood to warp and twist, which can create serious fixture alignment problems.

Concrete poles are often less expensive than conventional steel poles and can be direct buried. However, concrete poles are heavy, expensive to set, with high freight costs.

Steel poles come in two options. Conventional base-plate steel poles require expensive concrete foundations with anchor bolts. An alternative steel pole design avoids costly foundations with a galvanized steel pole shaft that slip-fits over a concrete base set directly into the ground and backfilled with concrete. This allows easy installation, resulting in reduced costs.

Electrical

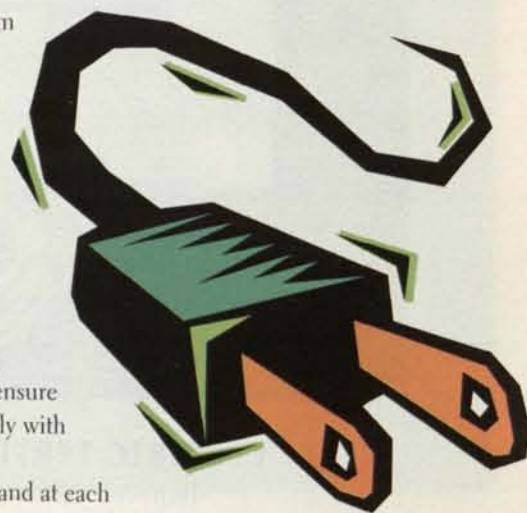
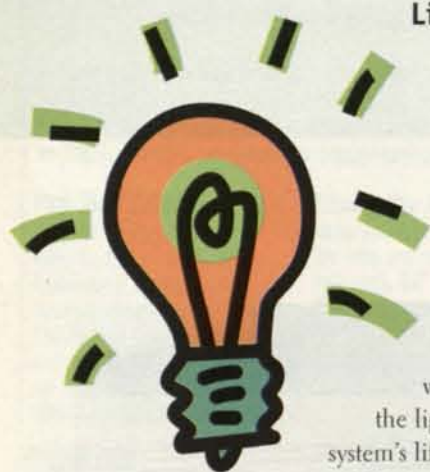
A sports lighting electrical system should be safe and simple. Although the electrical requirements for athletic fields are specialized, they are far less complex than most commercial and industrial applications. Electrical systems that comply with the National Electric Code, as well as state and local codes, coupled with luminaire assemblies that have Underwriters Laboratory approval, ensure that an installation will operate safely with minimal electrical maintenance.

Grounding at the service center and at each pole is needed to ensure safety. Grounding for lighting protection should be designed and installed according to National Fire Protection Association (NFPA) Code 780. Safety disconnects on each pole provide additional protection. Individual fusing of each fixture avoids gang failure of the lights and eliminates costly emergency repairs.

By keeping several additional factors in mind, the likelihood that a lighting project will please administration as well as players and spectators is enhanced. First, compare the warranties offered by different manufacturers. How long are each, and what items are covered? Multi-year part and labor warranties reveal confidence in the product.

Next, be sure to develop clear-cut specifications concerning how the project should be built, and its expected results. Definite standards prevent unacceptable substitutions, and bids that are overpriced to cover the uncertainties of an under-defined project. **ST**

Jeff Rogers is the vice president of developmental sales for Musco Sports Lighting, Oskaloosa, IA.



Funding concept leads to lighting installation

When someone has a good idea, it is sometimes referred to as a light going on in his or her head. A good idea by one high school parent booster was enough to light up an entire football field.

There are five high schools in Illinois School District 211. Three of the district's schools have lighting systems that were purchased with money raised by parent booster clubs. According to Steven East, director of purchasing and facilities for District 211, when the district looked into the possibility of getting lights for its Hoffman Estates High School, one of the boosters came to East with an idea. The booster does engineering work with Sprint, a global communications provider, and made the recommendation about a possible deal between Sprint and the school district.

East contacted Sprint about the concept and District 211 was able to strike a 10-year agreement with Sprint in which Sprint paid for four light towers as well as any electric bills associated with the use of those towers. The contract also includes two 5-year options. As part of the contract, Sprint also handles all maintenance on the light towers. In exchange, District 211 allowed Sprint to place a cellular antenna at the top of one of the light towers.

According to East, the cellular antenna still had to comply with village zoning laws and construction regulations. In other words, Sprint did not circumvent any state or local rules by getting permission to use



Illinois School District 211 was able to strike a 10-year agreement with Sprint in which Sprint paid for four light towers as well as any electric bills associated with the use of those towers.

the high school's light standards for cell tower placement. However, Sprint did accomplish its goal of placing a cell tower in a needed zone and found a willing participant by striking a deal that benefits both sides. The cost of the system is approximately \$125,000-\$130,000 for materials and installation, according to Musco Sports Lighting.

"I don't know if the local bank or church would have been as willing to let Sprint put its tower on their property," said East.

According to East, an added benefit for Sprint is the positive public relations standing it gained with local residents by doing something good for the community.

The lighting system consists of four 80-ft.-tall Musco sports cluster light standards. Sprint presented District 211 with the site plan and a recommendation for the type of lighting system, but District 211 had final approval.

Although the Sprint cellular antenna tops only one of the four light standards, the other three standards are all rigged to accommodate cellular antennae. District 211 retained the right to form contracts with other cellular companies for the use of those light standards.

East said that he could foresee similar deals being beneficial to schools throughout the county. He added that any school districts entering into similar deals

should look closely at the site plan being proposed by the cellular provider, because the school district should get light standards it likes. **-John Kmitta**

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Around the Grounds



LIGHTING SYSTEM PACKAGES

GE Sports Lighting Systems offers sports lighting

configured specifically for the needs of parks & rec departments, schools, colleges, and various recreational facilities. The GE systems approach encompasses financing, engineering, product, installation, and service.

For public sector facilities, GE Capital Public Finance, Inc., the world's largest equipment lessor, is available to provide low-cost, tax-exempt funding support and leaseback plans that are creative and flexible. This innovative financing support keeps lighting projects within budgets and without long delays, says the company.

Site-specific engineering services ensure each installation provides the specified illumination for any type of sports, on new or existing facilities. Assemblies come factory pre-aimed to match computer generated lighting models. GE Sports Lighting Systems local representatives coordinate the custom-engineered installations with local contractors. Systems are modular with plug-together connectors for fast job site assembly. Systems carry a standard 7-year or optional 10-year warranty. Competitively priced replacement lamps are readily available from local electrical distributors.

Various pole types and mountings are available to suit aesthetic preferences and budgets. Light fixtures can be configured with integral or ground level, remote ballast. For facilities with aerial equipment constraints, GE offers the SportStar(tm) lowering system, a complete package that uses a winch and cable drive system to lower light fixture assemblies to the ground.

Ballasts from GE Sports Lighting are engineered for more efficient operation, longer lamp life and lower energy consumption. To eliminate glare and spill light pollution, GE Sports Lighting reflectors feature a glare control option. The GE Powr•Spot(r) advanced two-stage reflector design captures and redirects light onto the playing field that would otherwise be wasted into the night sky or misdirected into the eyes of the players and spectators or onto adjacent properties. Used in major stadiums worldwide, the Powr•Spot luminaire provides color rendition suitable for both viewing and television broadcasting.

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CUSTOM MATS

Pioneer can help keep entrances clean with their olefin-constructed mats that can be customized with your logo, slogan, or mascot. The company says these mats last for years and are easy to clean, and can be used outdoors or indoors without rotting, fading, or shrinking.

Colors available include royal blue, navy, hunter green, emerald green, red, gray, burgundy, black, and brown.

800-877-1500

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MAKE GOOD HOLES

The new Turf-Tec HoleMatic removes 1 1/2-in. soil cores out of the ground, 8 in. deep. Uses include setting PVC sleeves or pipe in the ground for PVC markers or temporary fences. French drains can be made in clay infields or baselines without drilling and mixing soil with infield mixes. Holes can be dug under trees to fertilize, or to set termite bait stations.

Simply place the HoleMatic over the soil and hit the anvil with a hammer until the unit is 8 in. in the soil, and the core is ejected out the specially designed shoot. Then pull up the handles to remove from the ground. Works in soft, hard, rocky, wet, or dry soils, says the manufacturer.

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LITTERBOSS SWEEPER/VACUUM

Minuteman Parker has brought to market the LitterBoss rider-operated litter sweeper/vacuum. The LitterBoss offers the convenience and comfort of a ride-on at the cost of a walk-behind. The LitterBoss cleans more in less time than walk-behinds while reducing operator fatigue, says the company.

The LitterBoss was designed climb curbs up to 9 in. high and it will pick up broken glass, soda cans, cigarette butts, leaves, etc., without difficulty from sidewalks, curbs, parking lots, alleys and landscaped areas. The 12-ft. accessory hose vacuums up debris in hard to reach areas such as under and around picnic tables and benches, trees, signage, and fences.

Emptying the debris hopper is effortless and clean. The design of the LitterBoss' collection system uses a collection bag in the hopper to contain the debris while dumping without spillage. To keep dust to a minimum, the unit is equipped with front mounted spray jets that expel a light mist on demand while sweeping to control side broom dust and the hopper features an electronic filter shaker.

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