



# Environmentally Friendly Sports Lighting

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**W**e are all aware of the difficulties that programmers or facility schedulers have in trying to satisfy the sport facility needs of all user groups within a municipality. With escalating land values and the uncertainty of provincial transfer payments, parks and recreation managers are placed in the unenviable position of having to do more with less.

The increased awareness of our personal needs for physical fitness has greatly improved the quality and quantity of our fields over the last 15 years. The user groups have become more sophisticated and therefore more critical with respect to the condition of every aspect of their "home" fields. Intermunicipality competitions have increased the opportunities for many players to use facilities in other towns, and they are very quick to compare. We all know that "the grass is always greener..." A facilities manager's worst nightmare would be to have a councillor or Parks Commissioner who plays on a competitive "travelling" team.

As many sports programs involve evening play, a good quality lighting system virtually doubles the use of the complex. From mid-August on in some areas of the country, it is difficult to complete

even one night game, let alone consider or schedule a second. The capital cost, the life-cycle cost, and the maintenance cost of the lighting system are far less than the cost of the construction and maintenance of a second field.

In the past, a lighted sports park was required to be constructed either in an in-

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dustrial area, or it had to be designed with large impractical buffer zones to reduce the light trespass on neighbouring properties. The round spun aluminum sports floodlights available for the past 30 to 40 years provide as much light above the aiming point as below. This creates a difficult, if not impossible problem of light control. The design of the spun aluminum

sports floodlight has not changed much over the last 25 years, and they are still the most capital cost-effective way to light a field. The addition of optical hoods, glare shields, and louvres to the fixtures is not a satisfactory solution as they can reduce the fixture efficiency by up to 50 percent.

Today's technology allows the experienced sports lighting designer to control the lumen output (light) produced by the lamp, thus eliminating light trespass and annoying glare. By definition, light trespass or spill light is a measurable amount of light outside of the primary playing areas of the field. Glare is a visual annoyance. A 150-watt floodlight on a boathouse one kilometre across a lake, aimed at your cottage would represent glare, not light trespass.

The first controlled optic sports lighting facility in Canada was built in 1981. There was only one product available then that could satisfy the on-field lighting standards as outlined by the Illuminating Engineering Society of North America while eliminating spill light on neighbouring properties. There was a capital cost premium to be paid for that product over the cost effective spun aluminum fixture; however, using this premium product did

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provide the municipality with much more effective use of their parkland. A higher ratio of lighted fields per acre in residential neighbourhood parks resulted in a considerable overall capital cost saving. As a result of the light control on the playing surface, the upward light component has been greatly reduced.

In recent years, the Dark Sky Society in the United States and Canada has been lobbying to legislate to reduce or control the amount of night sky light pollution created by all exterior lighting designs. The Dark Sky Society is a group of scientists, naturalists and environmentalists who are interested in controlling the nighttime glow visible over most large cities in North America. This glow seriously hampers the work of astronomers. It is claimed that this sky glow also confuses migratory birds which directly affects the balance of nature.

The concern for the control of spill light is rapidly becoming a major design aspect in many municipalities. One municipality in Canada, located in the Greater Toronto Area, now has a light pollution by-law. All site plan submissions must include a complete detailed exterior lighting layout that must conform to this bylaw. One of the most difficult criterion of this by-law is that no lighting fixture will allow more than two percent of the light output that it produces to go above the horizontal plane of that fixture. Obviously, the spun aluminum sports floodlight is not used in this municipality.

Almost all lamp and lighting fixtures available to the Canadian designer come from American research and development laboratories. Our market in Canada is not large enough to support the developmental costs for Canadian-only products. The

work of groups such as The Dark Sky Society has now created a market in the United States for an environmentally friendly sports lighting fixture. Larger markets create more product design creativity and hence more market competition. Today, there are new products on the mar-

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ket which, due to their increased operating efficiency, more than offset the minor price increase compared to the older design spun aluminum sports floodlight. As with all purchases, the most cost-effective system is not always the best. The lighting system that you install should provide for 25 to 30 years of effective use, not years of aggravation. A capital cost increase of \$15,000 amortized over 30 years is a very small price to pay for a quality lighting installation.

Recommended lighting design criteria for all sports played in the United States and Canada have been established by the Illuminating Engineering Society of North America. Most sports associations that publish their own specifications for lighting, have simply followed I.E.S.N.A. recommended practices. When most people discuss the lighting of a sports facility, they refer only to foot/candle levels. They are

actually referring to the maintained average foot/candle levels. The average lighting level is only one of many important rules that must be followed to provide a successful sports lighting project.

Poor on-field lighting uniformity, especially in critical play areas, can expose the facility owners to serious risk management implications. Lack of a scheduled maintenance program can also create a serious hazard as lamps can deteriorate or fall.

There are lighting product sales techniques that rely solely on a lighting design computer to market their product while lighting your field. Agreed, computers are a useful design aid, but they do not play baseball or soccer. Reducing pole heights, or reducing the number of poles is a cost-effective way of reducing the price of your new installation and may satisfy the foot/candle average level on the playing field. Lighting uniformity and pole locations are far more important to the play of the game than is the average lighting level.

If you or your lighting consultant have not used a specific new product or design application on a previous installation, arrange to see a couple of completed facilities similar to yours, at night, and if possible, while in use. A new installation that is improperly specified can create a serious risk management situation and it is only after the project is complete that you realize that you have a problem. A few evenings of research can avoid 25 years of grief or several thousand dollars of retrofit work. ♦

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