



**Count on it.**

## **High Tech Sport Fields**

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As everything else in today's world, even sport fields are going high tech. But what does that really mean in the construction of sport fields and what are the benefits to you. Here are some high tech basics: High tech fields are built with a high content of sand (~80%), usually a smaller proportion of an organic component such as peat (~15%) and sometimes a soil amendment such as calcined clay or diatomaceous earth with specific water and nutrient holding characteristics (~5%). This mixture of sand, peat and amendments is called the "root zone" and can vary from 8 to 12 inches in depth. It is usually placed over 4" of gravel. Almost all high tech fields have an underground drainage system to carry excess water away from the site and an automated irrigation system is a must. This article isn't going to be a "how to" article but rather an exploration of the concept and what a high tech field may or may not do for you.

### **Why Sand?**

Or for that matter why high tech? There are three reasons to build high tech fields and they are drainage, drainage and drainage. It only takes one game of football, soccer, lacrosse or field hockey played in the rain to ruin a natural soil field for the remainder of the year and the best way to drain water out of a field is with sand. Sand, or at least the right sand, is porous. It allows water to quickly penetrate the surface yet if your field is design properly it will hold a reservoir of water six to eight inches from the surface which will train roots to grow deep. But not just any sand will work; it must be graded by particle size and particle distribution and mixed with the proper organic and other amendments in order to provide the drainage, footing and nutrient holding capacity needed to grow turfgrass and withstand the rigors of sports.

In essence, then, what a sand based field does, if design properly, is move water as quickly as possible from the surface, drain the excess water away and hold, either in organic matter, soil amendments or a perched water table, enough water to grow good strong sports turf. If a high tech sand based sport field is designed well, built well and managed properly, you will have the best playing surface possible.

## **Struggles With Sand**

While all of this sounds great, there are a few things to know before you embark on building a high tech sand based field.

1. First and foremost, they are not indestructible. Over scheduling and overuse of natural grass sport fields will doom them for destruction whether they are built of sand or native soils. They are, after all, a living, breathing ecosystem that needs to be in balance with they're use. They need time between seasons to heal and repair themselves and they need to be managed properly in order to do so. However, if managed properly, they can take substantially more use and abuse than a native soil field and they will repair faster in the off-season.
2. Second, there is a learning curve to managing high sand content high tech fields. Due to the large pore spaces in sand when the water flows through so do the nutrients. Both watering and nutritional practices must be altered. Remember though that these pore spaces also provide for an easy exchange of air for the roots and an easy place for the roots to grow deep into the root zone.
3. Third, not all high tech fields are alike. There are many variations of depth of the root zone, types of sand found in the area, types of peat and types of soil amendments. Some designers are actually adding a small percentage of soil into the root zone to increase stability.

## **Bells and Whistles**

What I've described in terms of a sand based root zone is just the beginning of what can be put into a high tech field. In the northern climates, heating systems are popular and in the warmer climates cool air is used to cool down the root zone. Sub-surface air exchange systems can exchange the air in the entire root zone of a field in less than an hour. Special stabilizing fibers can be added to the root zone mix or "sewed" into the established turf make the field more firm.

## **Where to From Here?**

As mentioned earlier, a well designed, well built, well maintained high tech sand based field will provide the best playing surface possible. So if you are in the process of planning a new stadium, a new sport complex I would encourage you to explore a high tech field but remember you must be able to control usage. Depending on your climate, turfgrass species, field design and management practices a high tech field could be capable of handling 35 to 75 events. An event being defined as: any activity on the

field. A game would be an event, a practice would be an event, a band practice would be an event, and a picnic would be an event. You get my drift.

There are many proficient sport field design and sport field construction companies out there. The STMA (Sports Turf Managers Association) is a great source of information and contacts, there are also many sport field consulting companies at your disposal. Please take advantage of the successes and mistakes made in the past and build the field of your dreams. You won't be disappointed!

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