



The “Natural” Choice for High Performance Athletic Fields

Nothing can replace experience when it comes to a major project where community time and money are invested. Each project has its set of unique conditions. Plaisted soil experts are ready to help you identify the best solution within your budget parameters.

Just as there is a move to organic food, many landscape architects are finding that the environmental benefits of natural turf far outweigh those of artificial turf. And after decades of debates over natural versus synthetic athletic field turf, one thing remains, professional athletes prefer high performance, sand-peat grass fields.

As of 2013, all but two of the Major League Baseball fields are natural turf.¹ Of the 22 NFL stadiums with open roofs, only eight have artificial turf and six of these are the northern most NFL stadiums in the United States.²

New information on the long-term costs and health risks of synthetic fields is moving dollars back to natural turf. Take a fresh look from the overall perspective.



Unraveling the Cost in Dollars and “Sense”

If something sounds too good to be true, then it probably is. As the use of artificial turf has grown in popularity for high schools, colleges and municipalities, so have the misconceptions of the benefits associated with the synthetic surfaces.

Get informed. Search out the most recent data and make sure to get a full perspective on the following:

1. Total Cost

- Initial Installation
- Annual maintenance (\$25,000 to 50,000)
- Replacement (synthetic avg. 8 to 10 years)

2. Field Performance

- Amount and type of use
- Weather and existing soil conditions
- Long-term reparability

3. Health and Environmental Safety



1. What is the “Real” Cost?

Everyone knows installation costs for synthetic turf are significantly higher than natural turf. That leaves maintenance as the potential cost savings area for the artificial motivation.

While touted for its low maintenance costs, studies have shown that artificial turf can cost more in upkeep and maintenance than natural turf.

Synthetic turf maintenance includes sweeping, dragging, loosening and redistributing of infill and cleaning, which may involve watering and the use of special solvents and cleansers. Depending upon use and weather conditions, a sand-rubber mix may need to be added annually, and there is other maintenance such as seam repair and snow removal.³

Not only is the installation cost for synthetic turf much higher than natural turf, there is the cost of removal and disposal of the material at the end of its life (avg. 8-10 years). Disposal costs are estimated at \$130,000 plus transportation and landfill charges according to one study.⁴

More and more studies are confirming that when all costs are annualized over the life of the field, synthetic fields cost more per year.

2. Field Performance: What are the criteria?

For public fields that are intended to serve multiple sports and public events, durability can be a driving factor for choosing an artificial turf, particularly with limited ability to do maintenance between events. But is that really the solution?

Non-sporting events, like a graduation ceremony, can be damaging and costly to artificial turf. High-heeled shoes, folding chairs, and tables can damage fibers; liquid spills can cause mold growth and can stain fibers. Natural grass on the other hand repairs itself.

3. The Safety Debate: Further disclosure

Artificial turf is losing ground on the safety side of the story. One of the main health issues is that synthetic turf fields can get up to 60°F hotter than grass, with surface temperatures reaching 160°F on summer days according to one study⁵, and even higher temperatures were reported on other studies.

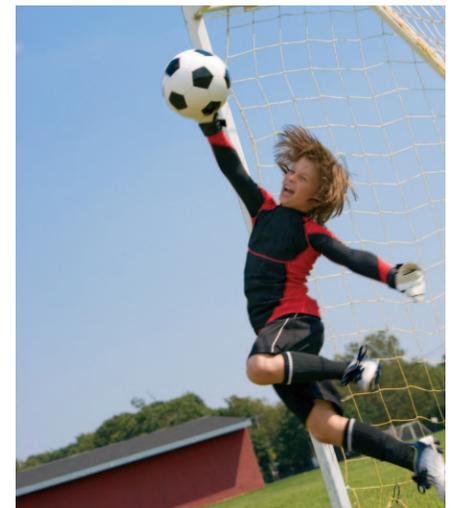
It has become a standard procedure to water down synthetic turf prior to practices and games, yet the dangers are still there. According to a study published by Sports Engineering and Technology, “While watering methods were initially successful in lowering the surface temperature to that of natural turf grass, the low temperatures could not be maintained for periods of time equal to the length of standard sporting events. The high surface temperature is one of the main health issues and can contribute to physiological stress and cause serious heat-related illnesses.”⁶

Recycled tire risks—recent ties to cancer

Concerns over the health risks of synthetic shredded tire turf have been around for decades. Any studies done in the past were incomplete at best. In 2013, the EPA retracted their synthetic turf safety assurances. In 2015, just two years later, cancer cases among athletes who have played on synthetic turf fields are being gathered in a ever lengthening list. The Environment and Human Health Inc. (EHHI) published in June 2015 that there are now 153 cancer cases reported, and of those, 124 are soccer players with 85 being soccer goalies.⁷

Turfgrass Producers International has published multiple articles on this topic, including “Is artificial turf hiding an 800 pound gorilla?”⁸ The July 2011 issue referenced studies on the danger of inhaling carbon black nanoparticles and carbon nanotubes found in pulverized tires and the tire crumb used on artificial turf fields. One study went so far as to suggest, “Inhaling carbon nanotubes could be as harmful as breathing asbestos.”⁹

Even new inert materials like Thermo Plastic Elastomer (TPE) have not been tested for long-term dangers if inhaled. At what point is the line drawn that the risks are too high?

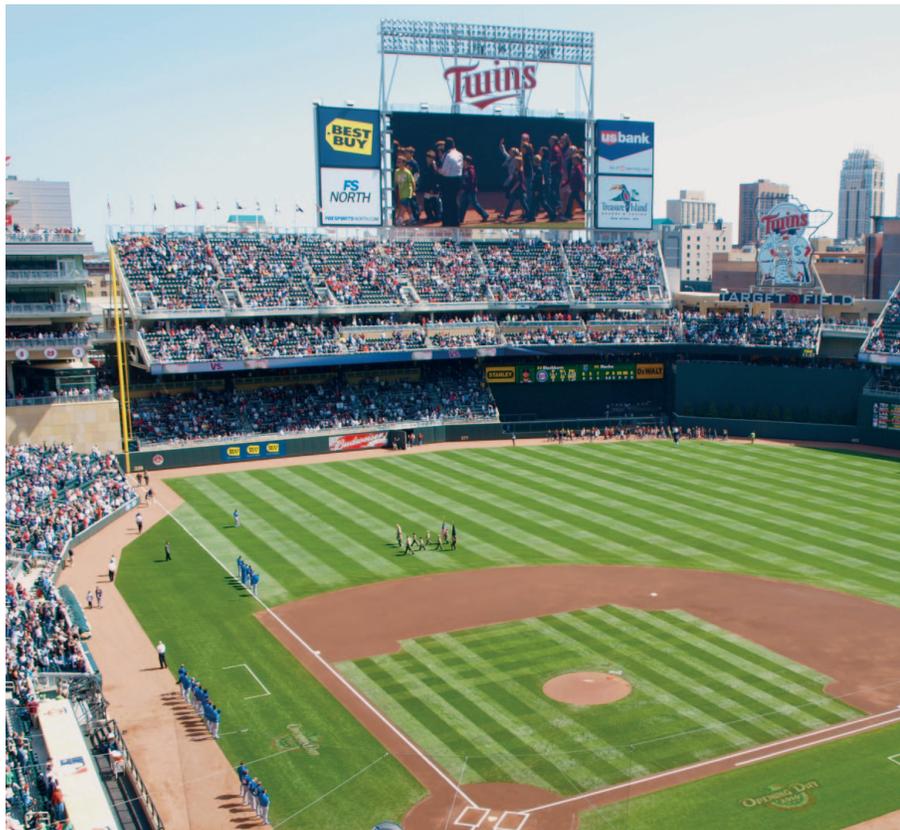


The “Natural” Choice— for Many Reasons

The “natural” solution has come on in great leaps and bounds. Thanks to the ongoing endeavors of plant breeders within both traditional and innovative new species, grass seed solutions have been introduced that provide key characteristics such as wear, drought resistance and disease resistance. Maintenance regimes have also been much improved.

In addition to the toxicity issues in artificial turf and their related health concerns for athletes, research has found that artificial turf consumes and wastes energy. Turfgrass Producers International¹⁰ shares these facts regarding the benefits natural turf has on the environment:

- **Pollution control** – Natural grasses trap and remove dust and dirt from the air and absorb gaseous pollutants.
- **Aquifer recharger** – Grass filters the water as it flows into the groundwater. A typical high school football/track complex is about 2 acres. If it rains 40 inches, over 2 million gallons of water from rain will fall on this area.
- **Cooling effect** – Turfgrass is one of the best exterior solar radiation control ground covers because it absorbs radiation and converts it to food for growth through photosynthesis. Grass absorbs the sun’s heat during the day and releases it slowly in the evening.
- **Naturally regenerative** – Natural grass can be easily and inexpensively treated to propagate self-repair because of the inherent regenerative character of the living plant.
- **Naturally attractive** – The visual appearance and smell of grass are naturally pleasing to people.



Natural is a 4:1 win– Big news for Title IX

When all the calculations are done, four natural turf fields can be built for the cost of one synthetic field. That’s after considering the initial installation costs, maintenance, and disposal of materials at the end of the synthetic life (avg. 8 to 10 years).

Under Title IX of the Education Amendments of 1972, women and men must be provided equitable opportunities to participate in sports; which includes provision of equipment and supplies. Bottom line—schools can install 4 natural turf fields to 1 synthetic field.

As natural turf has evolved, new grass varieties are showing improved wear tolerance, shoot density and root depth, strength of recovery, plus shade and heat tolerance. One example is Harvard’s wildly successful durable organic turfgrass that withstands the pounding of thousands of feet daily.

Proper turf selection for the local conditions is key to long-term field performance. Engineered soils offer a drainage system equivalent to the rock base for synthetic turf, plus this soil filters contaminants better and allows storm water to be recaptured and reused for irrigation.

Here are some of the engineered soils available through Plaisted Companies for the midwest:

- **High performance Sand-Peat Fields (ASTM F-2396)**
- **Blended Sand-Peat Rootzone Mix** – Engineered to perform internal drainage to remove excess water out the rootzone
- **Engineered Sand Layer** – To match the rootzone sand mix
- **Engineered Gravel** – To bridge the sand and mix

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Minnesota athletic fields completed by Plaisted Companies

Professional fields

Minnesota Twins Baseball Stadium @ Target Field, St. Paul Saints Stadium @ CHS Field, Minnesota Vikings Practice Facility

Community projects

Anoka Castle and Goodrich Fields, Edina Lewis Park Soccer Complex, Eden Prairie, Fort Snelling Soccer Complex, Frank Quillici Field, Golden Valley, Harmon Killebrew Field, Hastings, Minnetonka, National Sports Center, Northeast Park, Owatonna Parks, Robbinsdale, Rosemount, St. Louis Park, Van Cleeve Field, Woodbury Soccer Field

College fields

Bethel College, Dordt College, Hamline University, Macalaster College, Martin Luther College, Normandale Schools, St. Catherine University, Saint Mary's, University of Minnesota, Saint John's University

High school fields

Anoka, Armstrong, Arden Hills, Arlington, Braham, Buffalo, Chanhassen, Crosswinds, Cretin-Durham Hall, DeLaSalle, Eden Prairie, Edison, Elk River/Rogers, Fridley, Glencoe, Grand Rapids, Harding, Hawthorne, Lakeville, Melrose, Minnetonka, Mound Westonka, Orono, Redwood Falls, Robbinsdale, Roosevelt, St. Anthony, Totino Grace, Wayzata, White Bear Lake



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Ordering Information

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To obtain more technical information or for a price quote contact dispatch.

Footnotes

- 1 Kevin Baxter, "When it comes to grass, baseball no longer fakes it," LA Times (September 13, 2013)
- 2 "List of current National Football League stadiums," <https://en.wikipedia.org> (July 23, 2015)
- 3 SportsTurf Managers Association, "A Guide to Synthetic and Natural Turfgrass for Sports Fields, 2nd edition," www.STMA.org
- 4 Aaron Patton, University of Arkansas Division of Agriculture, "Synthetic Turf vs. Natural Grass Athletic Fields," <http://turf.uark.edu/turfhelp/archives/021109.html> (February 2009)
- 5 Luz Claudio, "Synthetic Turf: Health Debate Takes Root," Environmental Health Perspectives (March 2008)
- 6 Sports Engineering and Technology, "Human health issues on synthetic turf in the USA," <http://pip.sagepub.com> (August 15, 2011)
- 7 Environment and Human Health, Inc., "The Cancer List Keeps Growing Among Athletes on Synthetic Turf," http://www.ehhi.org/turf/turf_cancers.shtml (June 16, 2015)
- 8 Jim Novak, "Is artificial turf hiding an 800 pound gorilla?" Turfgrass Producers International, <http://www.turfgrasssod.org/files/6/tpi-e-newsletter> (June/July 2011)
- 9 Larry Greenemeier, "Study Says Carbon Nanotubes as Dangerous as Asbestos," Scientific American, <http://www.scientificamerican.com/article/carbon-nanotube-danger/> (May 20, 2008)
- 10 Turfgrass Producers International, "Natural Grass and Artificial Turf: Separating Myths and Facts," <http://www.turfgrasssod.org/pages/resources>

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