Synthetic Turf Feasibility Study

Originally Presented to the Board of Education
January 6, 2011
By Dr. David R. Schuler, superintendent
Updated January 11, 2011

Historical Perspective

Over the past several years, the Board of Education and district officials have received numerous comments from staff and community members, some positive and some negative, regarding the installation of synthetic (artificial) turf in the district. As a result, this feasibility study is designed to determine whether or not it would be feasible to install synthetic turf in District 214 stadiums.

For years in the fall and spring of the year, our stadium fields have not been in acceptable playing condition due to rain, exacerbated this past spring by an extended cold spell, which prevented grass from growing on the stadium fields for our spring sports seasons. As a result, we have had to move competitions off the stadium fields and onto practice fields.

Physical education classes rarely are able to access the stadium fields for outdoor classes due to unacceptable field conditions, and our marching bands also rarely are able to practice on the fields due to their conditions.

Two years ago, one marching band performed only one half-time show the entire football season due to field conditions, and the officials at one varsity football game almost canceled the game due to questionable field conditions. Thankfully, no significant injury occurred that evening, as there would have been no way for an ambulance or golf cart to get onto and off the field with the injured student athlete.

Several marching bands host marching band invitationals, which are the bands biggest annual fundraisers. Both Wheeling and Prospect's invitationals have been losing participation because marching band directors would prefer to march on a turf field where they know their band's uniforms will not be ruined and the invitational will not be canceled or moved indoors.

Our spring girls' soccer programs are at a significant disadvantage, because both the boys' soccer season and football season are in the fall. If a field gets torn up and is unusable at the end of the fall season, the stadium field often is unplayable in the spring. That results in our girls' soccer teams not playing on the stadium field and being forced to play on smaller, non-regulation practice fields without lights or stands for fans. As a result of that extra usage, the practice fields are often torn up and in poor condition.

Additionally, over the past 10-15 years, we have added sports levels for both boys and girls soccer and softball. There are also more junior varsity football games and intramural events, which places additional stress on our practice fields.

District 214's stadium fields are one of the, if not the, most underused facilities on our schools' campuses. From graduation day in the spring until the first day of football practice in August, the fields are generally not used to allow the grass time to recover and our Buildings and Grounds staff time to get the fields in playable condition. In most years, most stadium fields are used less than 45 days a year.

Due to the marching bands' inability to practice on the stadium fields, two high schools (John Hersey and Prospect) must block off part of their parking lots each fall and lose parking fee revenue totaling $16,500 on an annual basis.

The district's Environmental and Energy Committee has been studying the possibility of eliminating the use of pesticides and fungicides by pursuing an Organic Grass Management program. As a district, we have been unable to pursue such an approach due to the significant use of our practice fields. Currently, the district's practice fields are used by our physical education classes for instructional space and our athletic teams and marching bands for practices and competitions. With the fields' high usage, there is no opportunity for the practice fields to recover. At the same time, the stadium fields remain unused as our Buildings and Grounds staff does an outstanding job getting them ready for major competitions.

Types of Synthetic Turf

There are several different kinds of synthetic turf products and several different ways in which the artificial turf is installed. In conducting research into the different products and approaches to turf installation, it is evident that the district would want to find a product that has a double-locked stitched seam, not an over-stitched seam or a glued-seam. The number one maintenance problem associated with synthetic fields is loose, unglued seams that pull apart. Turf products that have an over-stitched seam can experience a loosening of stitches. That is where cleats can get caught, or as the turf separates, other injuries can occur. Double-locked stitched together seams are stitched from the bottom, which enhances the product's safety.

Health and Safety of Double-Locked Stitched Seam Turf Products

A research project conducted by researchers at Montana State University compared student injuries on natural grass versus FieldTurf, a synthetic turf product that uses a double-locked stitch seam. Results of that project were distributed to the Board. The study's conclusions indicate that fewer injuries occurred on the FieldTurf field than on natural grass. In addition to the study, there are 66 references listed to support the researchers' findings.

Another independent research study, conducted by Penn State University regarding the safety of FieldTurf to other artificial turf products and natural grass, found that FieldTurf is safer than other products due to the way the seams are connected and the product's overall quality.

An article in the October 2004 New England Journal of Medicine also supported the argument that FieldTurf is safer than natural grass. Data from that article also was distributed to the Board.

The Board also received two additional articles—one published by the Turfgrass Resource Center and one published by the University of California–Berkeley's College of Engineering.

As it relates to dealing with bodily fluids (vomit or blood for example) that may come into contact with synthetic turf, following accepted custodial practices and universal precautions, which is exactly the same as our current protocol, is all that is necessary as long as the turf installed is porous in nature. There would not need to be a change in policy or procedure, and we would continue to follow our current Communicable and Chronic Disease Policy.

Some synthetic turf compositions can become very hot in the summer. I would not recommend a product that has the majority of its base in black rubber from tires. The black soaks up the sun and the field can get up to ten degrees warmer than the air. There are products that have a base made up of small little light-colored rubber balls, overlaid on the black rubber from tires, which results in easier maintenance and does not increase the field's temperature.

Environmental Impact

From an environmental perspective, there truly is no comparison between natural grass and synthetic turf fields. As an example, by installing FieldTurf, the synthetic turf product mentioned previously, the district would:

- Save clean drinking water by eliminating thousands of gallons of water used for irrigation purposes
- Eliminate the use of chemicals, pesticides, fungicides, and fertilizers on both the stadium and practice fields
- Remove tires and rubber shoe soles from landfill sites
- Eliminate fuel-powered mowing, aerating, and re-seeding, thereby lowering the use of natural gas and other fossil fuels
- Eliminate grass clippings

FieldTurf also is 100% recyclable. When a FieldTurf product needs to be replaced, the entire turf system is recycled. FieldTurf is also recognized as a member of the U.S. Green Building Council and the U.S. Environmental Protection Agency (EPA) Greenscapes Program. FieldTurf can significantly contribute towards a school or district receiving their LEED (Leadership in Energy and Environmental Design) Certification as well.

In the event the district installed turf, we could then pursue an Organic Grass Management Program and eliminate the use of pesticides and fungicides on our practice fields. As mentioned earlier, due to the high volume of usage on the practice fields and in an attempt to keep our stadium fields in playable

condition, we have no option except to use the aforementioned chemicals in accordance with state and federal parameters.

Cost of Initial Installation of a Synthetic Turf Product

The total cost of the initial installation of a synthetic turf field would be approximately $800,000 - $1,000,000 per field. The variance in cost relates to the amount of drainage site work that would have to be done at each site.

It is estimated that annual costs for repairs and/or on-going maintenance would be around $2,000 - $2,500 per year over the life of the field.

The cost for replacing the field is approximately half of the original investment because only the top field would need to be replaced.

Current Cost to Maintain Stadium Fields

The current cost to maintain our stadium fields on an annual basis is approximately $55,000 per field.

Life Span of a Synthetic Turf Field Product

Current anticipated life expectancy of a synthetic turf product is approximately 10-14 years.

Benefits of Installing a Synthetic Turf Product

Every student in the building would have access to the field.

There would be a significant increase in the use of the stadium fields for physical education classes, marching band competitions, athletic contests, and additional outside rentals.

From the most recent studies, a double-stitched seam product like FieldTurf is safer than other artificial turf products and safer than natural grass in some instances.

It is more environmentally friendly to install and replace a synthetic turf product than maintain natural grass.

By utilizing the stadium field for physical education classes and athletic and marching band practices, the district would be able to pursue the implementation of an Organic Grass Management program and eliminate the use of pesticides and fungicides on our practice fields.

From a sanitary perspective, without having actual grass or grass seed, there will be significantly less goose droppings on the stadium field where students are marching, having physical education classes, and playing athletic competitions.

In addition, installing a synthetic turf product could raise revenue in the district through an increase in facility rentals.

There also would be an opportunity for enhanced community use of the facility, if our stadium fields had a synthetic turf field.

Negatives Associated with Installing Synthetic Turf

There is a significant upfront cost to the district.

The quality of the synthetic turf and the installation of the turf are critical.

Not all staff or community members may view turf as a high priority item.

Feedback

On Tuesday, January 4, 2011, I held several listening sessions for interested parties to share their thoughts, perspectives, and concerns. In addition, I sent an email to all staff and some parents asking for their feedback as well. Over 70 individuals attended the listening sessions. In addition, I did receive several emails from staff and community members regarding the feasibility of installing synthetic turf on our stadium fields. Comments from the listening sessions and emails can be summarized by the following bullets:

- All other conference schools have synthetic turf fields, which really put our soccer teams, football teams, and marching bands at a competitive disadvantage.
- Due to the wear and tear the stadium fields receive from soccer and football, most fields are not used at all between graduation and the football season.
- It is such an underused space right now.
- Since it cannot be used as a practice field, teams are forced to run three practice shifts in the spring.
- Three physical education classes could use the stadium field each period, which are three additional teaching stations.
- Since girls' soccer is in the spring and the fields have not usually recovered from the fall, the girls often play in dirt or on the practice fields.
- Currently, District 214 hosts a number of IHSA tournament competitions and makes money from hosting those tournaments. IHSA now has started considering whether or not a school has synthetic turf field in determining state competition locations.

- Synthetic turf could lead to a significant increase in usage by community groups and allow for more community collaborations.
- Synthetic turf also could generate significant revenue for the district through rentals.
- It really is unfair to girls' soccer. One rainy Friday in the fall will wreck the entire spring season for the girls' soccer team.
- Marching band festivals are losing fundraising capacity, as more and more bands look for competitions held on synthetic fields.
- Often times in the spring, girls' soccer games have to be moved or rescheduled due to the condition of the stadium field. This has a significant impact not only on our own teams, but our opponents, and the officials as well from a transportation and supervision perspective.
- When the stadium fields are unusable for soccer, games are sometimes moved to smaller practice fields that don't meet the appropriate field-size parameters.
- The complete lack of stadium field usage results in the complete use of all other practice fields. The overall result is that none of the fields are in great shape.
- Marching bands have to practice in a parking lot with lines all over the place. Then we expect them to compete on a field that has markings every five yards.
- A band mother indicated that her daughter sprained her ankle marching on a muddy field that was all torn up.
- The stadium field is seeded and watered on a regular basis. As a result, it attracts geese and there are geese droppings all over the field that we then ask our football and soccer kids to run around and dive in.
- A synthetic turf field could eliminate the need to move practices off campus, as some programs have been forced to do.
- The current fields put our teams at a competitive disadvantage versus those teams able to practice daily on their competition field.
- The type of synthetic field is incredibly important…don't just put in a cheap one that's only going to last a few years or have tons of maintenance issues…Do your homework.
- Consider the environmental ramification.
- Cost considerations must be considered as part of the feasibility study. Turf can't be installed at the expense of peoples' jobs.
- There needs to be a prioritization of facility needs.
- Shouldn't the Board consider putting a pool in at each school before putting in artificial turf?
- Consider more than just the stadium field… perhaps practice fields and/or the tracks, press boxes, and bleachers should be done at the same time?
- Schools that have synthetic turf can put all kinds of athletic teams on the stadium field for practice. (For example, the baseball and softball teams could take fielding practice in the spring of the year, which would allow practices to end earlier.)
- The past several years, we have had to move home games to away sites due to the stadium fields being unplayable. That entails additional bus costs and is unfair to the student athletes and their parents/guardians and other fans.
- The Athletic Trainers would like to be involved in developing health/safety protocols for incidents that might occur on the turf. They agree that the most current research supports that

there is no significant safety concerns associated with synthetic turf, as long as it is a quality product and is installed appropriately.

- The Buildings and Grounds Supervisors have indicated that they will work with whatever product is installed on the stadium field: natural grass or synthetic grass.
- A mom indicated that her daughter performed only once her entire junior year as part of the marching band, because the fields were in such bad condition.
- The district should consider corporate sponsors to help defray the cost of the turf.
- The significant ruts that occur in our current stadium fields are a real safety issue.
- Almost all away athletic and band competitions are held on turf.
- Current stadiums are completely inefficient.
- Teams never get a chance to practice on their own home competition field.
- It is important to consider the organization and oversight of the personnel involved if the stadiums are going to be used considerably longer into the evening.
- The President of the Arlington Heights Youth Athletic Association indicated that the installation of turf could be a great connection into the community. He indicated that the AHYAA would be interested in partnering with the district to get turf. He further stated that it could prove to be a revenue generator for the district and said it would be nice to let the lower level sports teams use the stadium field for their competitions.
- Every student in the district would benefit from a turf field either through physical education, marching band, or athletics.
- It is awesome to see the coming together of the music staff and athletic coaches to support a common cause that would benefit all children.
- It is imperative that taxes not be raised to pay for turf.
- A lot of youth programs are already playing on turf…then the kids get to high school and they have to play on mud and dirt…
- Stadium fields could go from the most underused space to the most used space on campus.
- Athletes being recruited by colleges face a significant disadvantage as half of their competitions are being played on natural grass fields that are often not in great shape. That's compared to most other area student athletes who play the vast majority of their competitions on a synthetic turf field.
- Look for corporate sponsorships and community partnerships to help pay for the turf.

Return on Investment and Initial Findings

It is clear that there are many benefits to installing a synthetic turf product. However, the initial installation cost of a synthetic turf product is expensive. During these challenging fiscal times, I cannot recommend that the Board of Education, by itself, install synthetic turf in the stadium fields throughout the district. Over the course of the lifetime of the field, it would not appear to be in the best fiscal interest of the district.

Return on Investment (ROI)

Cost of Installing Synthetic Turf per field (12-year life expectancy of turf)

Initial Cost	$900,000
Annual On-going Maintenance	$27,000 ($2,250 x 12 years)
Total	$927,000

Cost of Managing Natural Grass per field (Over 12 years)

Annual Cost	$55,000
Total over 12 years	$660,000

Points for Further Consideration

While it is my recommendation that the Board not solely finance the installation of synthetic turf in the stadium fields, I do think there is another option. If the district could find a partner or partners to split the costs associated with the installation of a synthetic turf product, it could be cost beneficial for the district. Consider the following Return on Investment (ROI) analysis:

Return on Investment (ROI) if Costs are Shared

Cost of Installing Synthetic Turf per field (12-year life expectancy of turf)

Initial Cost	$900,000
Annual On-going Maintenance	$27,000 ($2,250 x 12 years)
Total	$927,000
50% of the Total Costs	$463,500

Cost of Managing Natural Grass per field (Over 12 years)

Annual Cost	$55,000
Total over 12 years	$660,000

Under this scenario, the district would recoup its initial investment in 8.4 years.

Take this scenario one step further. If the product lasts 12 years, and the district and its partner(s) would decide to continue their shared-cost partnership, the situation would become even more beneficial for the district.

Cost of Replacing Synthetic Turf (12-year life expectancy of the replacement turf)

Replacement Cost	$450,000
Annual On-going Maintenance	$27,000 ($2,250 x 12 years)
Total	$477,000
50% of the Total Costs	$238,500

Cost of Managing Natural Grass (Over 12 years)

Annual Cost	$55,000
Total over 12 years	$660,000

Under this scenario, the district would recoup its investment in 4.3 years.

Therefore, if the district was able to find a partner to split the costs of the initial installation and the replacement of the synthetic turf, the cost to the district of maintaining the turf would be $702,000 over 24 years, or an average of $29,250 per year. That compares to a total cost of $1,320,000 for maintaining natural grass stadium fields over 24 years.

If the district could find a partner to split the costs of the initial installation and the replacement of the synthetic turf, there would be a cost savings to the district over the 24-year life span of $618,000 per field, or over $3.2 million district wide. That would be over $3 million dollars that could be directed to educational programs and/or staff.

Per Use Costs

The numbers become more powerful by conducting a per use analysis. Currently, the majority of our stadium fields are used around 45 days per year. Over 24 years, that equates to 1,080 days of usage. The cost of maintaining a natural grass stadium field for the next 24 years is estimated to be approximately $1,320,000, which works out to be a per use cost of $1,222.22.

45 x 24 = 1,080
$1,320,000 \ 1,080 = $1,222.22

We estimate a minimum of 240 days of usage per year with a synthetic turf field. Over 24 years, that equates to 5,760 days of usage. Under the shared cost scenario listed above, the district would spend $702,000 over 24 years to install and maintain synthetic turf which works out to a per use cost of $122.

240 x 24 = 5,760
$702,000 \ 5,760 = $122

These numbers do not include any increase in rental revenue as a result of increased use of the stadium fields, so any increase in rentals would increase the aforementioned savings.

Financing

The financing for installing synthetic turf fields cannot come at the expense of other educational programs or at the expense of staff. It would be nearly impossible to find alternate funding sources to fund the entire project within our existing budget.

However, if we were able to find partner(s) to split the costs, and we did a maximum of two schools a summer, we could allocate funds from our current Capital Projects fund for those purposes. That way there would be no impact on the overall budget. We would be reallocating funds that must only be used for Capital Projects.

As noted previously, in the event the cost of installing, maintaining, and replacing was split, there would be considerable cost savings associated with installing synthetic turf fields. Those significant savings could be used to support educational programs and staff. So while the investment for installing a synthetic turf field would not come at the expense of educational programs or staff, the savings associated with installing a synthetic turf field would benefit educational programs and staffing.

Recommendation

In conclusion, it is clear that there are many benefits to installing synthetic turf in our district stadiums. At the same time, there is a significant upfront cost associated with installing a synthetic turf field. The Return on Investment financially would suggest that the Board not bear the full cost of installing a synthetic turf field.

However, there is a very positive Return on Investment financially if the Board could find a partner or partners to split the cost of installing a synthetic field. Additionally, the funds for up to two fields per year could be allocated in our current Capital Projects budget, which would have no impact on staffing or other educational programs within the district. Further, the cost savings associated with a long-term partnership could benefit other educational programs throughout the district. Therefore, I would recommend that the Board consider exploring this option.

Next Steps

The Board of Education was interested in continuing the discussion. As several Board members indicated, however, the "devil is in the details." The Board also affirmed the fact that any initiative to install synthetic turf fields could not be completed at the expense of educational programs or staff. Further, they indicated the project could not be done by raising the district's budget or raising property taxes. Funds for the project would need to be reallocated from the existing Capital Projects Fund. Therefore, I will begin meeting with staff to further define expectations and parameters for a partner. I will continue to update the Board on my progress in that regard.