

Why Artificial Turf is an Especially Bad Idea at Ritzer Field

by Jane Conrad

In addition to all the general arguments against artificial turf made in a previous essay, “The Problems with Artificial Turf,” I believe there are reasons why installing artificial turf at Columbia High School’s Ritzer Field is an especially bad idea. These relate to the complexity and expense of construction at that site, added difficulties of maintenance, burdens imposed on the school and neighborhood environment, and the general unsuitability and unfairness of appropriating all of the high school’s outdoor space, imposing the risks and restrictions of artificial turf on the entire student body and school community.

Construction issues

Compared to Underhill Field, Ritzer Field has various characteristics that seem likely to make turf field construction more expensive, prolonged, environmentally destructive and more likely to fail prematurely.

Groundwater

Underhill Field occupies a flat, open area at 260 feet elevation, with water draining away in all directions. Ritzer is 100 feet lower, at the bottom of a slope, half a block from the river. A contour map shows a 40 foot drop in elevation across the site from Academy St. to Valley St.¹ According to the Synthetic Turf Council’s “Guidelines for Synthetic Turf Base Systems,” this type of location means groundwater may be a problem, both during initial construction and later when the field is in use:

“Groundwater can be more of a problem when a flat surface meets the bottom of a steep slope. The water flows downwards until it reaches the flat plane. This movement is powered by gravity. The water is thus under pressure. As the moving water comes in contact with the standing water table under the flat plane, there is a pressure buildup. In extreme situations, the groundwater can be seen seeping out of the slope. It can also pop out of the ground at some distance from the bottom of the slope.”²

Any artificial turf field requires extensive storm water management engineering, since it is “an impermeable surface like a parking lot” which captures “huge volumes” of rainwater.³ Retention structures are required, either in the form of dry ponds or else underground storage reservoirs.⁴ In a rain event, Ritzer’s location means its storm water management system must be able to handle not only the water falling on the field itself but also water flowing down the slope above it, both above and below ground. There is also the fact that, with climate change, rainstorms are becoming more intense, with more water falling in a briefer time period. This all suggests that building artificial turf on Ritzer is likely to require careful engineering and quite

extensive underground water storage capacity, which in turn mean higher costs and prolonged work.

Sloping site

Ritzer Field slopes significantly (perhaps 3-5%).⁵ This is not bad for natural grass, but artificial turf fields require a slope of less than 1% (.5% is preferred).⁶ If an artificial turf field slopes more than this, the infill washes off the field. Ritzer Field slopes in the direction of the East Branch of the Rahway River, a half-block away. A storm washing large amounts of plastic infill off the site could lead to expensive environmental cleanup. In order to avoid this, extensive work will need to be done to level the site, presumably by both cutting into the slope on the uphill side, and raising ground levels on the downhill side; retaining walls will likely be required. In addition, according to the Synthetic Turf Council Guidelines:

“(O)n sites where the level needs to be corrected, cut and fill operations can be quite extensive, and will require the services of a qualified soils technician to conduct testing to determine if the contractor has achieved the proper soil density. In the event of a field failure in the future, these test results will be important to assess the likely cause of the failure.”⁷

The need to get rid of organic soil and trees

The first step in preparing to install an artificial turf field is to deal with “organics and other problematic soil conditions.”⁸ The contractor must “excavate and eliminate the organic soil that covers the work area,” since organic matter in the subsoil is seen as potentially contributing to premature failure of the artificial turf system. In the case of Ritzer, this is likely to be a huge volume of material, since topsoil depths are deeper in valleys than on ridges. To get a sense of the scope of the work involved, consider:

“an inch of eliminated material on a 100,000 square foot area equals 308 cubic yards, or the equivalent of around 20 dump trucks. When excavating to prepare the site for a turf field’s granular base, this can add up very quickly.”⁹

Another consequence of the total removal of this organic layer is that, if at some future date it is decided to remove the artificial turf field in favor of natural grass, all this topsoil will have to be replaced. Imported topsoil is always less “alive” than topsoil in situ, since the microbes and soil organisms which make nutrients available to plants (the ‘soil food web’) are destroyed by being dug up and left lying around in piles. It will cost more and take longer to re-establish a healthy field.

Construction of a turf field at Ritzer is apt to result in the destruction of most trees at the site, which are not likely to survive the extensive re-grading that will be required. The “vision” document from 2007 illustrating the future look of Ritzer does not reflect understanding of this reality.¹⁰ The artificial turf industry is hostile to the location of **any** trees in the vicinity of turf fields, seeing them as the probable cause of field deterioration and drainage failure. (“Leafy trees should not be located next to a field.”)¹¹

Added maintenance: leaves and other “contaminants”

Even if all trees are removed from school property, there are still plenty in the neighborhood. Residential lots with large mature trees adjoin the field. Removal of leaves in the fall (and oak catkins, etc. in the spring) will require many maintenance hours. Removal with leaf blowers is a tricky operation since this often blows infill off the field as well.

Burden on school and neighborhood environment

Artificial turf at Ritzer means Columbia High School and the surrounding neighborhood will suffer noise, dust and disruption for the duration of construction, not only during initial installation, but also every ten years thereafter when the field must be replaced. The area as a whole will be much hotter and drier.¹² The loss of trees and grass will impact air quality. Prevailing winds will carry the smell of the off-gassing field into the school and through the neighborhood. Some of the 7000 pounds of infill that migrate off the field each year will travel in students’ socks and shoes into the school building.¹³ Larger crumbs of infill will add to the maintenance duties of school sanitation workers; tiny particles of crumb rubber and silica will contribute to indoor air pollution.

On hot days (69 days above 85 degrees in 2018), the field will be unusable and thus a loss to the community.¹⁴ As a way of getting around the fact that the fields they installed are often too hot to play on, sometimes turf companies recommend installing field lights so games can be played at night. This represents a double imposition on the neighborhood – increased heat during the day followed by lights, noise and traffic at night.

Not suited for students at the high school

The artificial turf field at Underhill is a place students travel to for a particular purpose (a game or practice) and for a limited time. An artificial turf field at Ritzer would be different. **The field as shown in the 2007 document is immediately adjacent to the school, and takes up all outdoor recreational space at the school.** Such a field would be an all-day, every day, inescapable aspect of attending Columbia for every student.

This proximity to the school means 1) the field would be used in ways and with an intensity likely to void any warranty; 2) students will be unable to escape harmful health effects associated with artificial turf, and 3) the field's specialized nature, finicky maintenance requirements, and hard-to-reverse alterations to the terrain conflict with the variety of activities students do now, or may want to do in the future on their only adjacent field.

Sneakers harm turf (?)

All students at Columbia are required to take physical education classes for four years. The proposed artificial turf field at Ritzer would absorb all outdoor recreational space. **Yet artificial turf is a highly specialized surface.** Special footwear is required to protect it – specifically, cleats. According to the Synthetic Turf Council, “flat-soled rubber shoes greatly intensify the wear and tear on synthetic turf.”¹⁵ How then would such a surface respond to 2000 sneaker-clad gym students playing on it daily? This is one of many indications that artificial turf is not suited to this site.

Unavoidable health risks

The health risks involved in playing on artificial turf include heat injury, joint injury, risk of more serious concussion than on a grass surface, and exposure to toxic dust and gases. Installing artificial turf at Ritzer would expose the entire student body to these risks.

As described above, exposure to artificial turf field dust would not be limited to time spent on the field, since crumbs of infill will continually migrate into the school building with students, where they will impact indoor air quality. In order to mitigate the potential effects of exposure to toxic dust, the Center for Disease Control recommends the following after playing on artificial turf:

1. “After playing on the field, individuals are encouraged to perform aggressive hand and body washing for at least 20 seconds using soap and warm water.
2. “Clothes worn on the field should be taken off and turned inside out as soon as possible after using the field in order to avoid tracking contaminated dust to other places. In vehicles, people can sit on a large towel or blanket if it is not feasible to remove their clothes. These clothes, towels and blankets should be washed separately and shoes worn on the field should be kept outside the home.”¹⁶

These recommendations convey the expectation that artificial turf is confined to a remote location which is visited for a limited amount of time. These safety procedures are possible only for athletes who have access to showers or are returning home directly after playing on artificial turf. The fact that this will not be possible for Columbia students is yet another indication that artificial turf should not be installed at Ritzer.

Too specialized and restrictive for Columbia

Artificial turf is a specialized surface with finicky maintenance requirements and a long list of activities and materials that are prohibited in its vicinity. Some of these activities are things that high school students currently do every day in their only adjacent outdoor space. One of these activities is eating lunch. Many students eat their lunch outdoors on the grassy field every day (weather permitting). This is both enjoyable, and helpful in that it relieves crowding in the lunchroom. However, artificial turf suppliers forbid eating and drinking on turf fields, **because of the potential for harming the turf**. Since spilled food and drinks could contaminate the surface and eventually clog drainage, signs are often posted on the surrounding fences forbidding “Candy, peanuts, sunflower seeds, watermelon with seeds, oranges with seeds, potato chips, gum, FOOD, sports drinks, soda, coffee, ANY beverage other than water.”¹⁷ Meanwhile, the Center for Disease Control and Mount Sinai Children’s Hospital also recommend against eating and drinking on artificial turf fields, **because of potential harm to kids**.¹⁸

Other prohibited items include glass and metal containers, tables, “unapproved” chairs, umbrellas, tent stakes and corner flags. Bicycles, skates, scooters, skateboards and strollers are not allowed. Neither are “dogs, pets or other animals.”¹⁹

Defending against prohibited activities and materials is thought to require a fence. Artificial turf fields are typically surrounded by a chain link fence. **I would argue that fenced-off recreational areas are not a good look, or a good message, to the school or the larger community**. Though people in OUR community would never engage in such behavior, vandalism has been a problem in a number of communities where resentment has flared over restricted access to publicly-funded space.²⁰ Artificial turf is flammable and thus especially vulnerable to accidental or intentional burning; paint is also hard to remove from the surface. To combat vandalism, some schools have installed expensive security cameras to guard the fields²¹, an approach which is going down a police-state road where I doubt we want to venture.

In general, there is an unfairness to the proposition of confiscating all the open space at the high school for such a narrow purpose, requiring specialized footwear and treatment, and ruling out forever the possibility of having a school picnic, a school fair, a kite derby, an outdoor concert or outdoor theater performance, school gardens, or even eating lunch on the grass as kids do now every day.

References

¹Contour maps of Maplewood and South Orange areas can be viewed at <https://ngmdb.usgs.gov/topoview>

²Synthetic Turf Council, "Guidelines for synthetic turf base systems" (2017) p. 24

³Ibid, p. 26-27

⁴Ibid, p. 25-27

⁵Contour map of Maplewood and South Orange

⁶Synthetic Turf Council, op. cit., p. 21

⁷Ibid, p. 32-33

⁸Ibid, p. 12; p. 32

⁹Ibid, p. 15

¹⁰Kinsey Associates, Hackettstown, NJ "Preliminary redevelopment concept, Ritzer Field" (May 15, 2007)

¹¹Synthetic Turf Council, "Guidelines for maintenance of infilled synthetic turf sports fields" (January 2013) p. 5

¹²Synturf.org 'Heat effect' #4 "The New York City study" (2006)

Heat studies of Manhattan and the Bronx conducted by Dr. Stuart Gaffin of the Earth Institute at Columbia University found that sports turf surfaces were "among the hottest possible for urban areas, rivaling dark roofs and fresh asphalt. Typical early afternoon surface temperatures during the summer were in the 140-160 degree F range."

¹³Synturf.org 'Migration' #34

According to Andrew McNitt, director of the Center for Sports Science at Penn State, "between 6000 and 7000 lbs of crumb rubber can come out of a field each year."

¹⁴National Oceanic and Atmospheric Administration, Record of climatological observations, Newark Liberty International Airport, April-October 2018.

¹⁵Synthetic Turf Council, "Guidelines for maintenance of infilled synthetic turf sports fields" (January 2013) p. 12

¹⁶Center for Disease Control and Prevention, “Potential exposure to lead in artificial turf: public health issues, actions, and recommendations” (June 18, 2008)

¹⁷Synturf.org, ‘Forbidden fields’ Examples of signage on artificial turf fields.

¹⁸Center for Disease Control, op. cit.

The CDC’s “General Recommendations on the Use of Fields with Artificial Turf” state:

- “Eating while on the field or turf product is discouraged, and
- Avoid contaminating drinking containers with dust and fibers from the field. When not drinking, close them and keep them in a bag, cooler, or other covered container on the side of the field.”

¹⁹Synturf.org, ‘Forbidden fields’

²⁰Synturf.org, ‘Vandalism’

#3 Charlestown, Massachusetts “Arson in Charlestown” (August 2007)

#22 East Hampton, NY: “Vandal burns a \$ sign into turf field” (July 9, 2009)

“A vandal burned a 20-by-60-foot-long dollar sign into the synthetic turf football field at East Hampton High School, leaving behind a five-page letter of protest...”

David Giambusso and Brian Whitley, “Three Westfield teens are arrested in vandalism on Scotch-Plains-Fanwood high school field” [The Star-Ledger](#) (May 10, 2009)

Tracy Ness, “Vandals strike Chatham’s Haas field,” [Independent Press](#) (March 27, 2009)

“(N)o less than six incidents of vandalism have plagued the \$1 million turf field behind the Chatham Middle School since the start of the school year last September...”

²¹Synturf.org, ‘Vandalism’

#7 Jackson, New Jersey, “Town buys surveillance equipment for turf fields” (June 24, 2008)

#29 Baltimore County, Maryland, “It costs real green to protect fake grass from vandals” (June 9, 2010)