T&E/ED COMMITTEE #1
January 29, 2015
Worksession

MEMORANDUM

January 28, 2015

TO: Transportation, Infrastructure, Energy, and Environment Committee
Education Committee

FROM: Essie McGuire, Senior Legislative Analyst

SUBJECT: **Resolution to Support Use of Plant-Derived Materials for Infill in Artificial Turf**

Today the Transportation, Infrastructure, Energy, and Environment Committee (T&E) and the Education Committee will consider a resolution to support the use of plant-derived materials for infill in artificial turf. This resolution is sponsored by Councilmembers Berliner, Riemer, and Katz, Council President Leventhal, and Councilmembers Navarro and Elrich.

The following individuals are expected to participate in the discussion:

- Mitra Pedoeem, Acting Deputy Director, Montgomery County Department of Parks
- Kim Paniati, Engineer, Montgomery County Department of Parks
- James Song, Director, Department of Facilities Management, Montgomery County Public Schools

Background

The Council introduced this resolution (attached on circles 3-4) on December 2, 2014. On November 5, 2014, T&E Committee Chair Roger Berliner distributed a memorandum to his colleagues announcing his intent to introduce this resolution (memorandum attached on circles 1-2). The resolution is tentatively scheduled for Council action on February 10.

Over the course of several years and in the context of various projects, the Council has thoroughly and continuously reviewed the pros and cons of artificial turf and monitored the most current scientific information available on the subject. Following the interagency staff report on artificial turf in 2012, the T&E Committee recommended that the County adopt several best practices for procurement and operations.

The Council has also continuously expressed interest in alternative technology in the area of infill material other than crumb rubber. As noted in T&E Committee Chair Berliner's memorandum, in the fall some Councilmembers and staff visited the newly opened artificial turf field at Lakelands Park in the City of Gaithersburg. That field uses a plant-based infill comprised of a mix of coconut fiber, cork, and rice husks. Plant-based infill materials offer the opportunity to allay ongoing community concerns about the potential unknown environmental and health risks of crumb rubber and other synthetic materials.

In preparation for this worksession, the T&E Committee Chair asked Council staff to work with the Parks Department and MCPS to more fully understand the state of the industry of alternate infill materials, including what is known about cost, availability, and performance of the materials.

Review of alternate infill materials

Staff from the Montgomery County Department of Parks took the lead on compiling information about available alternate infill materials, and hired a consultant to provide research and subject matter assistance. The summary of this review is attached on circles 5-6. As described on circle 5, this review was a comparative assessment of infill materials available from major manufacturers and was not an attempt to comprehensively analyze every available product. As such it provides useful overview performance and cost information and an understanding of some of the operational features specific to plant-based infill. There remain many questions that will have to be addressed in the course of a more project-specific design and installation process.

In sum, staff concludes from this review that plant-based infill materials are a viable alternative and can be successfully used to build and maintain artificial turf fields going forward. Both Parks and MCPS have stated their commitment to pursuing alternate infill materials in future field installations. The next two projects are likely to be the Winston Churchill HS stadium field and a playing field at the Laytonia Recreational Park. Given that these will be the first projects undertaken by County agencies using the plant-based infill, it will be very important to analyze and review the design, bid, and construction experience in both cases. **The Committees will want to continue to receive progress reports on these projects from the agencies as important context for subsequent projects in the future.**

The summary on circles 3-4 provides an overview of the pros and cons of plant-based materials, features which the Committees may want to discuss in more detail with the meeting participants. The strongest advantage is the avoidance of environmental and health concerns associated with synthetic materials. An additional significant advantage is that the plant-based materials maintain cooler temperatures than crumb rubber, which is a major issue for summer playability in this area. Most of the disadvantages can be addressed through maintenance practices, and again will need to be evaluated over time in the context of actual project experience.

The primary unknown factor at this juncture is the cost, which is estimated to be higher than crumb rubber projects due to increased cost of the infill materials and additional cost of a "shock pad" under the field, as well as an estimated higher annual cost of maintenance for the field. Council staff notes that while this is an important consideration and seems likely based on current information, each project has unique characteristics that affect the bid process and it will be difficult to assess the cost impact, positive or negative, until there is some actual experience with County projects over time.

Conclusion

Council staff thanks Parks staff for taking the lead on this review of available plant-based infill materials. The Council has had a long standing interest in artificial turf as a means to increase playing field availability and a long standing interest in identifying artificial turf field materials that would alleviate community concerns. The question posed to staff and in front of the Committees today is whether alternate infill materials appear, given current experience and information, to provide a viable, effective means to advance both interests. At this juncture, the Council can both support the agencies' intent to pursue plant-based alternate infill materials in artificial turf playing fields at this time and continue to review the results of these projects as additional information continues to become available in this evolving field.

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MONTGOMERY COUNTY COUNCIL
ROCKVILLE, MARYLAND

ROGER BERLINER
COUNCILMEMBER
DISTRICT 1

CHAIRMAN
TRANSPORTATION, INFRASTRUCTURE
ENERGY & ENVIRONMENT COMMITTEE

MEMORANDUM

November 5, 2014

TO: Councilmembers

FROM: Roger Berliner, Chair
Transportation, Infrastructure, Energy, and Environment Committee

SUBJECT: Artificial Turf

As you know, the City of Gaithersburg recently opened an artificial turf playing field in Lakelands Park that is constructed of an organic infill material. I, along with Council Vice President Leventhal, Councilmember Andrews, and staff from several Councilmember offices, visited the field last week with Council staff, Park and Planning staff, officials and staff from the City of Gaithersburg, and representatives of the company that produces the infill material. I was very impressed with the material, the condition of the field, and the increased playability that the organic infill provides.

The Council has worked diligently for several years to understand the pros and cons of artificial turf fields and to follow the most current scientific thinking available on the health and environmental safety aspects of crumb rubber infill. Following the 2012 staff report, the Transportation, Infrastructure, Energy & Environment Committee (T & E) recommended adopting several best procurement and operational practices to ensure that the County's approach to artificial turf matched the best thinking of other jurisdictions, such as San Francisco. Even so, many in our community have remained concerned about the potential risks that could come from contact with crumb rubber infill.

At this juncture, I am convinced that there are now sufficient viable alternative infill materials available that we no longer need to rely on crumb rubber infill in our effort to maximize recreational opportunities in our County. While our national environmental and health experts will continue to study synthetic materials, I believe that we can now shift our focus to installing organic infill materials that alleviate many of the community's concerns and provide excellent playing conditions for our young athletes.

I plan to introduce a resolution on December 2 that states the intent of the Council to endorse organic synthetic materials for use in artificial turf playing fields going forward. I will then hold a T & E Committee discussion of this resolution in January, followed by Council action. In the interim, I have asked Council staff to work with Park and Planning and MCPS to more fully understand the state of the industry of alternate infill materials, including what options are available as well as cost and durability

information. I look forward to moving the Council's conversation about artificial turf into the next generation of science in this area.

I ask for your support of this resolution and welcome your participation in January's committee discussion.

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Resolution No.: _____
Introduced: _____
Adopted: _____

COUNTY COUNCIL
FOR MONTGOMERY COUNTY, MARYLAND

By: Councilmembers Berliner, Riemer, and Katz, Council Vice President Leventhal, and Councilmember Navarro

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SUBJECT: Use of Plant-Derived Materials for Infill in Artificial Turf Playing Fields

Background

1. There is a very high demand for use of County playing fields for youth and adult sports and other recreational activities.

2. County agencies began installing artificial turf in some County playing fields to increase the hours of available use for the community and to achieve a more sustainably consistent playing surface on the field.

3. Since County agencies began installing artificial turf fields, the technology of infill materials has expanded and improved. There are now more types of both synthetic and plant-derived materials available in the industry. In particular, use of infill materials made from plant-derived substances resolves some environmental and heat issues related to synthetic infill materials, and may allay some community concerns about the potential unknown risks that could come from contact with synthetic infill materials.

4. Plant-derived infill materials for artificial turf playing fields show great promise to also afford high quality playing surfaces that can sustain significantly higher hours of use than a natural grass playing field, achieving the County's goal of increasing playing field availability for sports and recreation.

5. County residents, businesses, and government all need to be good stewards of the environment. County Government should lead by example with environmental initiatives to affirm the County's commitment to reduce its environmental footprint and to show that viable environmentally-friendly options are available and should be pursued whenever possible.

Action

The County Council for Montgomery County, Maryland, approves the following resolution:

The Council plans to approve only the use of plant-derived infill materials for new artificial turf playing fields in projects where the County funds or contracts for the installation of a new artificial turf playing field.

This is a correct copy of Council action.

Linda M. Lauer, Clerk of the Council

Summary of Study Results for Alternative Infills for Synthetic Turf Fields

January 23, 2015

In response to the County Council's request that Council staff work with Park and Planning to "more fully understand the state of the industry of alternative materials, including what options are available as well as cost and durability...", the Department of Parks hired a consultant, Leading Design and Development, LLC, to research current alternative infill products available. We did not perform a comprehensive study to compare every available product. We included the product installed at Gaithersburg as well as other offerings by the major synthetic turf manufacturers. The information collected was obtained through anecdotal data provided by field maintenance staff and owners, product research and 3rd party testing provided by manufacturers and testing and observation by the consultant.

The alternatives currently available are generally the same as was detailed in the September 14, 2011 final report of "A Review of Benefits and Issues Associated with Natural Grass and Artificial Turf Rectangular Stadium Field". They include:

- Sand with a combination of organic material, including Cork, Coconut Fiber, and Rice Husk in varying proportions
- Rubber alternatives: Nike Grind, Thermoplastic Infill, EPDM, and Envirofill

We focused our investigation on the products that contain sand and organics. Two of the organic products, Italgreen GeoFill (manufactured by Shaw) and InfillPro Geo (manufactured by Limonta) stand out because they have collectively installed over 800 fields in Europe and 10 in the United States. Some advantages and disadvantages for these products as compared to a traditional crumb rubber field are outlined as follows:

Advantages:

- Cooler temperatures: Manufacturers with moisture absorbing organic infill claim 30-50 degree temperature reduction in hot summer weather. If the organic material dries out then the heat reduction will be much less.
- Eliminate source of potential toxicity from crumb rubber, on the environment and health.
- Pressure distribution on foot more closely resembles natural turf than crumb rubber for improved balance and stability and reduced lower extremity injuries.
- The infll can be recycled by spreading on a grass or wooded area.
- No rubber odor.
- Organic Infill migrates less than crumb rubber since material is interlocked.
- Avoids the potential risk associated with the growing concern of the health effects of crumb rubber.
- Most of the alternative systems require a pad, greatly reducing the chance for Gmax standards to be exceeded.

Disadvantages:

- Increased Installation Cost for Turf System, which includes labor and materials for turf, and backing and pad: Estimated installation costs for combinations of organic and sand infill range from 20% to 50% higher than crumb rubber.
- Increased Maintenance Cost: Crumb rubber fields cost $10,000/yr to maintain; The organic would be approximately $20,000/yr.
- Infills with coconut must maintain 30% moisture level to achieve Gmax ratings and prevent deterioration of infill; This will require watering during periods of drought along with increased monitoring and inspection by Parks staff.
- Coconut infill will freeze and Gmax levels may not be safe while frozen. This will relate to less playable hours on the system and also reduced performance along with possible safety issues being too hard or slippery when frozen. A brine solution can be applied once per year to prevent freezing, but none of the U.S. owners reported making salt applications.
- Coconut infill will require more frequent top dressing than current crumb rubber fields.
- Mold potential: The suberin component of cork is anti-microbial and anti-allergenic and will repel pests, mold and prevent rotting. Manufacturers report that the organic infill closely mimics the ability of a natural grass field to harbor any contaminant, when aided by the benefit of sunlight/UV. However, shaded areas of the field are prone to mold and algae growth as well as possible germination of weeds and grasses due to the high moisture content of the system. The manufacturers recommend that trees be kept 100 feet away from the field.
- More Likely to Grow Vegetation: Seed that reaches the organic infill is able to sprout, which may require removal. Care must be taken to minimize seed sources from trees or seeding of adjacent vegetation.
- Coconut infill products are not able to be groomed or redistributed when moisture levels are high.
- The supply source for coconut and cork is outside of United States, making these components more susceptible to problems with quality, availability, consistency or price increases.
- Infills with a high percentage of cork can have issues with flotation if not very well drained.

During this study, Parks also learned that the Synthetic Turf Council has lowered the acceptable Gmax rating from 200 to 165 for synthetic turf fields. Shock pads can be placed under the turf to create a consistent acceptable Gmax rating regardless of the turf maintenance or condition. All but one of the organic/alternative infill products that we reviewed requires a shock pad.

Conclusions:

Based on the information collected in this study, we believe that it is possible to successfully build and maintain a field with a combination of organic and sand infill. There will be significant additional cost required for installation and maintenance, as compared with the crumb rubber infill we have traditionally used. Parks is committed to pursuing alternatives to crumb rubber for our synthetic turf for all future installations. Because these products have not yet been widely used in a public park setting, we recommend continued research and monitoring of the product.