

MEMORANDUM

FROM: Bob McLaughlin
TO: High School and Middle School Building Committee
DATE: October 23, 2019
RE: Artificial Turf Bid Scope Review

To assist the discussion this morning on how to document and bid the scope of artificial turf if we proceed with an alternative to crumb rubber, I have prepared this handout.

I have copied from my August 14, 2019, Report nine of the brief descriptions of the alternative infill products available and I have rearranged them in order with the least expensive as number 1 and the most expensive as number 9. Below each description in red is the cost differential as compared to crumb rubber.

I am attaching to this handout Exhibit 4 from my Report, which is the chart prepared by Warner & Larson, the Landscape Architect Consultant to Perkins & Will.

1. Brockfill.

This is a new product composed essentially of wood chips reduced in size to approximately the size of a grain of sand. Through our architect's landscape consultant, David Warner, this Committee Member was alerted to contact the City of Somerville, which had just completed a Brockfill artificial turf with another one under construction. This Committee Member visited the newly-constructed Brockfill artificial turf field and reports that it looked beautiful and appeared to have the feel of a well-manicured natural grass field. This Committee Member has also contacted the New England representative for Brockfill. There appears to be no independent studies of the Brockfill material, but their representative has provided this Committee Member with all manner of certifications and testing results. The advantage the manufacturer claims, in addition to being organic (and made from southern pine, the same material that toothpicks are made of), is it is cooler than crumb rubber.

Cost differential: \$60,637.50

2. Coated crumb rubber.

As the title indicates, this crumb rubber infill has a coating that the manufacturer claims reduces the release of any chemicals.

Cost differential: \$77,962.50

3. Waste shoe material.

This material is often referred to as Nike Grind because it is a byproduct of the manufacturing of Nike sneakers. The Nike material is regulated by the government on a Restricted Substance List which appears to give some comfort to those investigating alternative materials that it is less likely to have any harmful chemicals.

Cost differential: \$102,217.50

4. Walnut shells.

Again, the concern of an allergic reaction to nuts has been raised, but according to the manufacturer, the walnut shells are processed to remove all allergens.

Cost differential: \$112,612.50

5. Cork.

Some studies have indicated respiratory disease in cork workers exposed to cork dust.

Cost differential: \$119,542.50

6. Coconut fiber.

There is a concern that those allergic to nuts would be affected with a coconut fiber infill; although others have determined that a coconut is not a biological nut which would cause an allergic reaction.

Cost differential: \$154,192.50

7. Acrylic-coated sand.

According to the manufacturer, this product is composed of well-rounded sand, a proprietary acrylic, a Microban antimicrobial and a pigment. It does appear that many of the categories of organic chemicals of concern with other synthetic infills may be lower or absent with acrylic-coated sand, but further study is necessary.

Cost differential: \$181,912.50

8. EPDM rubber.

This is a specialty elastomer that is vulcanized (cured). Its properties were studied by the Norwegian Building Institute who concluded that EPDM Rubber contains lower concentrations of hazardous substances than the recycled rubber tires.

Cost differential: \$237,352.50

9. TPE.

Thermoplastic elastomer (TPE) is a general term that can encompass a variety of materials. Based upon on limited information, it appears that TPE used in artificial turf infill contains lower levels of many toxic chemicals than tire crumb. Some studies have expressed concern that use of TPE in indoor facilities posed the concern that it generated airborne dust but other studies have indicated lower generation of dust with a TPE field.

Cost differential: \$251,212.50

Infill Type	Costs				Potential Health Impacts				
	Costs \$/SF (infill only)		Total Project Cost Increase over SBR Crumb Rubber (approx.)	Replacement Interval	Operational Costs	Heat Exposure*	Chemical Exposure	Additional Injury Concerns	
	min	max							
Tire Crumb Rubber, Post-Consumer, SBR (w/ angular sand ballast)	\$ 0.75	\$ 1.00	N/A	8-12 Years	LOW	HIGH	MINIMAL	NO	
Plastic Crumb Thermoplastic Elastomer, TPE	\$ 4.00	\$ 5.00	\$ 251,212.50	8-12 Years	MODERATE	MODERATE	NO	NO	
Post Industrial Grinds (Nike Grind)	\$ 2.10	\$ 2.60	\$ 102,217.50	8-12 Years	LOW	HIGH	NO	NO	
Coated Crumb Rubber (Cushion Fall)	\$ 1.50	\$ 2.50	\$ 77,962.50	8-12 Years	LOW	HIGH	NO	NO	
Vulcanized Crumb Rubber, EPDM	\$ 4.05	\$ 4.55	\$ 237,952.50	8-12 Years	LOW	HIGH	NO	NO	
Acrylic Polymer Coated Sand (Envirofill)	\$ 3.00	\$ 4.00	\$ 181,912.50	8-12 Years	LOW	MODERATE	NO	NO	
Organic Infill: Coconut Fibers	\$ 2.85	\$ 3.35	\$ 154,192.50	8-12 Years	MODERATE	LOW	NO	NO	
Organic Infill: Cork	\$ 2.10	\$ 3.10	\$ 119,542.50	8-12 Years	MODERATE	LOW	NO	NO	
Organic Infill: Walnut Shells (Safesheil)	\$ 2.00	\$ 3.00	\$ 112,612.50	8-12 Years	MODERATE	LOW	NO	SLIGHTLY ABRASIVE	
Organic Infill: Softwood Particles (Brookfill)	\$ 1.50	\$ 2.00	\$ 60,637.50	8-12 Years	MODERATE	LOW	NO	NO	
Natural Grass Field	N/A	N/A	N/A	20 Years	HIGH	NONE	ND	NO**	

*Dependent on latitude and direct solar exposure

**Natural grass fields when poorly maintained or excessively wet/muddy can result in a higher number of injuries