



Rose Tree Media School District Synthetic Turf Information

December 1, 2025

Outline of Topics

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3. Synthetic Turf Infill Systems
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Synthetic Turf Carpet Overview

Synthetic Turf Carpet Types: *There are several different types of synthetic turf available. These systems are comprised of synthetic fibers with primary and secondary backing systems and a resilient shock absorbing system. The shock absorbing system can consist of infill, a shock pad, or a combination of both.*

Fiber: *Typically, the fiber used in synthetic turf is mostly polypropylene, but polyethylene, polyester, or nylon are used occasionally.*

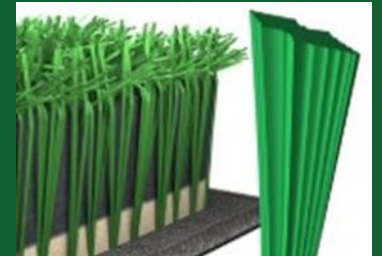
Types: *Tape (slit-film), Monofilament fibers or Hybrid (combination of both). "Thatch" systems are available which consist of the turf fibers in combination with smaller more intertwined fibers creating a dense sublayer intended to hold infill in place. Pile height is normally 2" for non-contact sport fields and 2 ¼" for contact sport fields. Variations do exist depending on infill and use of a shock pad.*

Synthetic Turf Carpet Systems

Slit Film is the more durable of the three types. Normally installed on high use facilities. It is the most common type.



Monofilament Fiber is a "second generation" of fiber and has shown a tendency to not be as durable as slit film. Made to look more like a grass blade it aesthetically looks better and has a tendency for better ball roll.



Hybrid Fibers are a combination of both and are becoming more common.



Synthetic Turf Infill Systems

Infill Materials: The infill materials commonly used consist of recycled rubber and sand in various ratios. Other systems (EPDM, SBR, coated SBR, e.g.), thermoplastics (TPE), inorganic materials (coated silica sand, e.g.), natural materials (cork, coconut fiber, soft wood, nut shells, e.g.) can be used.



Synthetic Turf Infill Systems

Ambient Rubber

Ambient (SBR) Rubber is a recycled material, cost-efficient, and durable solution that is the most common infill system. Processed through a rubber cracker mill at ambient temperature, the result is a more angular rubber granule than the cryogenic version, creating a loose infill with air pockets which can lead to infill migration. Mostly always used with silica sand. **Additional Infill Cost (90,000 SF Field): None since base system. Pad required? No - Pad optional. Infill normally can meet shock attenuation requirements (G-Max). Can be re-used.**



Cryogenic Rubber

Cryogenic (SBR) rubber is the cleanest, highest grade of rubber granule. Ground-up recycled tires are cryogenically frozen then shattered into small, smooth-edged particles. Mostly always used with silica sand. **Additional Infill Cost (90,000 SF Field): Approx \$60,000. Pad required? No - Pad optional. Infill normally can meet shock attenuation requirements (G-Max). Can be re-used.**



Synthetic Turf Infill Systems

EPDM Infill

EPDM (Ethylene Propylene Diene Monomer) is a polymer elastomer with strong resistance to wear and tear. This is a manufactured rubber and often is created by taking "all fall" from manufacturing process and grinding it up. **Additional Infill Cost (90,000 SF Field): Approx \$200,000. Pad required? No - Pad optional. Infill normally can meet shock attenuation requirements (G-Max). Can be re-used.**



TPE Infill

Thermo plastic elastomer (TPE) infill is non-toxic and heavy metal free, and available in a variety of colors. It is a plastic. TPE is durable, resists fading, and 100% recyclable and reusable as infill when the turf is replaced. **Additional Infill Cost (90,000 SF Field): Approx \$280,000. Pad required? Can be re-used.**



Synthetic Turf Infill Systems

Organic Infill

Made from natural materials, organic infill has become a popular choice in certain areas of the country (mostly southern USA). As an absorptive organic material, this infill locks in water. In the Northeastern USA the material can freeze making the field unplayable during the winter months. **Approximate additional infill cost per 90,000 SF field: \$175,000 Need Pad: Yes. Likely will need additional infill every 3 years (on average) at \$15,000. Cannot be re-used.**



Coated Rubber Infill

Rubber can be coated with colorants, sealers, or anti-microbial substances if desired. Coated rubber provides additional aesthetic appeal, reduction of dust by-products during the manufacturing process, and complete encapsulation of the rubber particle. **Additional Infill Cost (90,000 SF Field): Approx \$50,000. Pad required? No - Pad optional. Infill normally can meet shock attenuation requirements (G-Max). Can be re-used.**

Synthetic Turf Infill Systems

Coated Silica Sand Infill

*This high-purity silica sand with a soft or rigid coating specifically engineered for synthetic turf. These coatings are either elastomeric or acrylic (non-toxic) and create a bond with the sand grain sealing it from bacteria and providing greater performance and durability. This infill is normally used as 100% of the turf infill. Its hardness requires use of a pad. **Additional Infill Cost (90,000 SF Field): Approx \$235,000. Pad required? Yes. Can be re-used.***



Synthetic Turf Infill Cost Comparison

GENERAL DESCRIPTION	ADD'L MAINT REQUIRED	SHOCK PAD REQUIRED	PROS / CONS	NAT'L AVG PRICE V. SBR / SF (INSTALL)
SBR RECYCLED RUBBER / SAND	NO	NO	MOST COMMON / LEAST EXPENSIVE	N/A
COATED RUBBER INFILL	NO	NO	SBR IS COATED AND USED WITH SAND / CAN HAVE HEAT REDUCTION (IF GREEN)	\$0.56 / SF
CORK INFILL	YES	YES	HEAT REDUCTION / LOOKS LIKE NATURAL SOIL ADDITIONAL TOP DRESSING NEEDED (\$15,000 / 3 YR / FLOATS / PAD / FREEZES IN WINTER	\$1.94 / SF
EPDM	NO	NO	SIMILAR FEEL TO SBR / LIMITED SUPPLY / COST	\$2.22 / SF
TPE	YES	YES	HEAT REDUCTION (IF GREEN) /GOOD PERFORMANCE CHARACTERISTICS / COST	\$2.77 / SF
COATED SAND	YES	YES	HEAT REDUCTION / NOT SBR RUBBEREXPENSIVE / COMPACTS / COST / UNCOMMON	\$2.61 / SF

Field Injury History

When researching injury frequency on synthetic turf compared to natural grass turf there are studies showing no significant difference, while others say that injuries are more frequent on synthetic turf. Often the findings can be tilted depending on who funded the study. The one consistent pattern is that lower body injuries appear to be comparable between playing surfaces at lower levels of sports and increase at higher levels for both turf and grass. This is due to the stronger athlete and the biomechanical movement being significantly stronger. Upper body injuries and concussions are comparable with both field types.

There are many factors that contribute to injuries such as level of play (youth vs. professional), type of sport, footwear and maintenance. The latter factors significantly in all matters involving injuries. If a playing surface, whether it be natural grass or synthetic turf, is not properly maintained (uneven surface, compacted soil, infill missing in turf etc.) the unsafe conditions is what makes the chance of injury more likely.

Synthetic Turf Maintenance Best Practices

OWNER / "ROUTINE" MAINTENANCE

- *Grooming with suitable brush to maintain infill & remove fiber debris*
- *Magnet drag*
- *Sweep to remove organic & foreign debris*
- *Monitor infill levels*
- *Spot dress high wear areas*
- *Use protective mats on high wear areas (batters' box, pitching areas, etc.)*

CONTRACTED / "PERIODIC" MAINTENANCE

- *De-compact infill via tine rake & mechanical brushing*
- *Repairs to seams, inlays, & logos*
- *High wear replacements on baseball and softball fields*
- *Safety & performance testing*



Maintenance Costs (from Study)

TABLE E - Seasonal Maintenance Comparison					
Synthetic Turf (ST) / Natural Grass (NG)					
Maintenance Item	Hours (ST)	Hours (NG)		Synthetic Turf	Natural Grass
Mowing	0.0	56.0	Material Cost	\$ 2,900.00	\$ 7,200.00
Brushing	56.0	0.0			
Irrigation	0.0	32.0	Labor Rate	\$ 60.00	\$ 60.00
Fertilization	0.0	16.0			
Aeration/Seeding	0.0	24.0	Total Labor	\$ 4,080.00	\$ 13,440.00
Field Markings	12.0	48.0			
Turf Repair	0.0	48.0	Total Cost	\$ 6,980.00	\$ 20,640.00
Total Hours	68.0	224.0			

Maintenance hours estimated as follows (Typical Public High School or Municipal Agency):

¹ Mowing/Brushing: 28 weeks x 1 mowing/brushing per week x 2 hours, Synthetic Turf includes adding rubber/infill and brushing in at (2) applications per year

² Irrigation (Natural Grass): 16 weeks x 2 hours per week for water wheel transport and set-up

³ Fertilization (Natural Grass): Fall and Spring applications, pre/post emergent herbicide, (4) total maintenance events x 4 hours each

⁴ Aeration/Seeding: Core field, pulverize and drag plugs, drill, or slit seed, 3-person crew x 8 hours = 24 hours

⁵ Field Markings (Natural Grass): Line markings, 2 hours each application, applied bi-weekly each Fall (6) and Spring Season (6) x 2-person crew

⁶ Field Markings (Synthetic Turf): Line markings (Field Hockey Only), 2 applications x 2 hours each x 2-person crew + 4 hours each

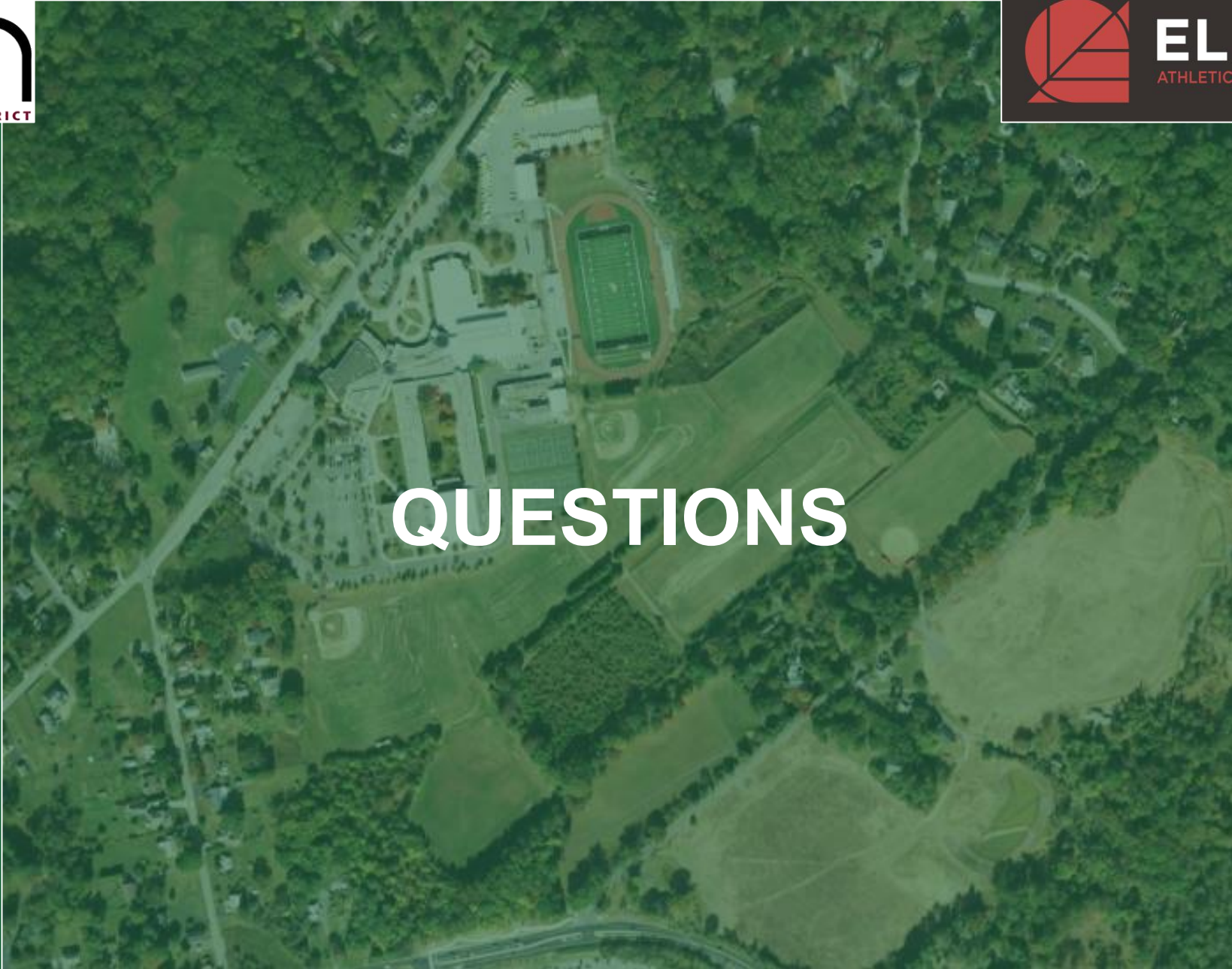
⁷ Turf Repair (Natural Grass): Spot repair, resodding, topdressing, 2 hours per week x 2-person crew x 12 weeks each Spring/Fall

⁸ Turf Repair (Synthetic Turf): Turf repair included as part of Warranty (No Cost)

Note: Labor rates are approximate and assumes allowance for hourly rate plus benefits.



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QUESTIONS