DEVOTION SCHOOL SCHOOL BUILDING COMMITTEE MEETING OCTOBER 29, 2015

AGENDA

SYNTHETIC TURF - INFILL OPTIONS STUDY OF EXISTING TREES ON SITE

SYNTHETIC TURF INFILL OPTIONS

KEY ISSUES

- MATERIAL OPTIONS
- COMPETITIVE AVAILABILITY
- REQUIREMENTS FOR OPTIMUM PERFORMANCE
- PERFORMANCE DATA
- EXPERIENTIAL ATTRIBUTES
- QUALITY CONTROL
- PRICE
- MAINTENANCE
- LIFESPAN/WARRANTY
- INSTALLATIONS

INFILL MATERIAL OPTIONS

	INFILL	DESCRIPTION	BRAND (MANUFACTURER)	INTRO DATE
	SBR Rubber	SBR/Sand Blend	Liberty Tire, Genan, others	1964 (Astrodome 1966)
	Coated SBR	70/30 SBR rubber w/ colored, UV resistant coating/sand	CoolFill (Sprinturf)	N/A
ETICS	Coated SBR	70/30 SBR rubber w/ UV resistant coating/sand	CushionFall Sport	N/A
SYNTH	Nike Grind	Nike Grind Ground up soles from athletic shoes; byproduct of shoe production (70/30 Nike Grind/ sand)		N/A
	TPE (Thermoplastic Elastomer)	Virgin rubber type copolymers	Target Technologies, So. F. Ter, others	N/A
	EPDM (Ethylene Propylene Dione Monomer)	Copolymer of ethylene and propylene with dione linkages that can crosslink with peroxides or sulfur (70/30 EPDM/sand)	N/A	N/A
	Rounded Silica Sand	100% Rounded Silica Sand + pad and thatch	N/A	N/A
	Coated Round Sand	100% Acrylic Coated Round Silica Sand + pad and thach	Envirofill (USGreentech)	2005
	Coconut/Cork	83/17 Coconut husk, coconut peat/sand + pad	Geofill (Italgreen)	2005
ATURA	Coconut/Cork	Coconut husk, coconut peat, cork and sand + pad	Geoplay	N/A
Ż	Coconut/Cork	Coconut husk, coconut peat, cork and rice husks	GeoPlus (Limonta)	2004
	Extruded Cork Composite (ECC)	Extruded cork composite, made up primarily of natural cork, polyethylene and elastomers	CoolPlay (FieldTurf)	N/A
	Cork	100% cork (83/17 Organic/sand + Pad)	Purefill (FieldTurf)	N/A

COMPETITIVE AVAILABILITY

INFILL	A-TURF	ASTROTURF	FIELDTURF	GEOTURF USA	HELLAS	SHAW SPORTS
SBR Rubber	YES	YES	YES	N/A	Realfill	YES
Coated SBR	N/A	N/A				CusionFall Sport
Shoe Rubber	Nike Grind	Nike Grind (Confirm)	Nike Grind	Nike Grind	Nike Grind	Nike Grind
TPE (Thermoplastic Elastomer)	N/A	N/A	EcoMax (mixture recyled turf and TPE)			Futrfill
EPDM (Ethylene Propylene Dione Monomer)	N/A	N/A	N/A	N/A		YES
Sub-angular Silica Sand	YES	YES (Confirm)	N/A	N/A		N/A
Coated Round Sand (Envirofill)	YES	YES	YES	YES	N/A	YES
Coconut/Cork	N/A	N/A		Greenplay	Limonta Geo Plus	Geofill (exclusive)
Extruded Cork Composite (ECC)			Cool Play (exclusive)			
Cork			PureFill (exclusive)			

SPRINTURF
YES
Cool Fill
N/A
YES
YES
N/A
YES
Geo Plus (Limonta)

REQUIREMENTS FOR OPTIMUM PERFORMANCE

INFILL	BRAND	SHOCK PAD	STRIKE ZONE (THATCH LAYER)	OTHER	TURF PILE HEIGHT
SBR Rubber	Various	NO	NO	N/A	AstroTurf, FieldTurf, Shaw Sports, Sprinturf
Coated SBR	Cool Fill, CushionFall Sport	NO	NO	N/A	N/A
Nike Grind	Nike Grind	YES?	NO	N/A	N/A
TPE (Thermoplastic Elastomer)	EcoMax	YES	NO	N/A	N/A
EPDM (Ethylene Propylene Dione Monomer)	N/A	YES	NO	N/A	N/A
Round Silica Sand	N/A	YES	YES	N/A	N/A
Coated Round Sand	Envirofill	YES (Alevo Sports Layer)	YES (with monofilament; optional w/slit fil)	N/A	1.5"-1.75" fiber
Coconut/Cork	Geofill (Italgreen)	YES	NO	30%-40% moisture	1.75" Bolt fiber
Coconut/Cork	Geoturf	YES	NO	N/A	N/A
Coconut/Cork	Geo Plus (Limonta)	YES	NO	N/A	N/A
Extruded Cork Composite (ECC)	Cool Play	YES	NO	N/A	N/A
Cork	Purefill	YES	NO	N/A	N/A

TURF FACE WEIGHT

AstroTurf, FieldTurf, Shaw Sports, Sprinturf
N/A
46 oz. Face weight
42oz. Pileweight
N/A
N/A
N/A
N/A

PERFORMANCE VS. FIFA STANDARDS

INFILL	BRAND	G-MAX	FORCE REDUCTION (60%-70%)	VERTICAL DEFORMATION (mm)	ROTATIONAL RESISTANCE (Nm)	VERTICAL BALL REBOUND (m)
SBR Rubber	Various					
Coated SBR	Cool Fill					
Nike Grind	Nike Grind					
TPE (Thermoplastic Elastomer)	EcoMax, EcoGreen (Field Turf)					
EPDM (Ethylene Propylene Dione Monomer)	N/A					
Rounded Silica Sand	N/A					
Coated Round Sand	Envirofill	97.5	68-111	7.4mm	N/A	N/A
Coconut/Cork	Italgreen Geofill	98-118	65-66	9.0-10.0	36-40	0.75-0.82
Coconut/Cork	Geoturf					
Coconut/Cork	Limonta Geo Plus					
Extruded Cork Composite (ECC)	Cool Play					
Cork	Purefill	N/A	62	7	4	0.82

BALL ROLL ((m)
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N/A
N/A 5.0-5.1
N/A 5.0-5.1
N/A 5.0-5.1
N/A 5.0-5.1

EXPERIENTIAL ATTRIBUTES

INFILL	BRAND	TEMPERATURE	APPEARANCE/TOUCH	ODOR	PARTICLE FLY	ABRASIVENESS
SBR Rubber	Various			YES		
Shoe Rubber	Nike Grind			N/A		
TPE(Thermoplastic Elastomer)	EcoMax	Slight Heat Reduction (FT)		N/A		
EPDM (Ethylene Propylene Dione Monomer)	N/A			N/A		
Rounded Silica Sand	N/A			NO		
Coated Sand	Envirofill*	20-30 Degree Heat Reduction vs. SBR	Green Color Similar to Natural Turf Surface	NO	85% Less Flyout than SBR	26+2 (ASTM F1015-03)
Coconut/Cork	Elite/Geofill	Proven Heat Reduction	Natural Feel	NO	Hardens / Blows Away When Dry	
Coated SBR	Cool Fill			N?A		
Extruded Cork Composite (ECC)	Cool Play	Proven 30-50 Degree Heat Reduction (FT)		YES		
Cork	Purefill	Proven Heat Reduction (FT)	Looks Like Natural Soil	NO		

FEEL (RESILIENCY)

Firm yet Loose
Mimics Natural Turf (SHAW Pressure Distribution)

QUALITY CONTROL

INFILL	BRAND	SYNTHETIC TURF COUNCIL GUIDELINES	ASTM TESTING	FIFA RATING	ISO CERTIFICATION	TOXICOLOGICAL DATA	CHEMICAL SAFETY ASSESSMENT
SBR Rubber	Various			YES		YES	
Coated SBR	Cool Fill			YES		YES	
Shoe Rubber	Nike Grind						
TPE (Thermoplastic Elastomer)	EcoMax	Slight Heat Reduction (FT)				YES	
EPDM (Ethylene Propylene Dione Monomer)	N/A						
Rounded Silica Sand	N/A						
Coated Sand	Enviro Fill*	20-30 Degree Heat Reduction vs. SBR				YES	NO
Coconut/Cork	Elite/Geofill	Proven Heat Reduction		YES		NO	
Coconut/Cork	Limonta Infill Geo	Proven Heat Reduction		YES		NO	
Extruded Cork Composite (ECC)	Cool Play	Proven 30-50 Degree Heat Reduction (FT)				YES	
Cork	Purefill	Proven Heat Reduction (FT)		YES		NO	

OTHER
Silicon Dioxide Listed as Carcinogenic Ingredient
G-Max Testing
Inconsistency; Lack of Quality Control
Standards (ST)
Untested (SHAW)

PRICE (includes turf and infill plus pad and thatch layers, if required*)

INFILL	BRAND	\$ UNIT PRICE (sf)	\$ COST FOR 22,000 SF FIELD	\$ PREMIUM VS. SBR
SBR Rubber	Various	\$4.10	\$90,200	Price baseline
Coated SBR	Cool Fill	\$4.50	\$99,000	8,800
Extruded Cork Composite (ECC)	Cool Play	\$4.50	99,000	8,800
Nike Grind	Nike Grind	\$6.00	\$132,000	41,800
Coated Round Silica Sand	Envirofill	\$6.30	\$138,600	48,400
EPDM (Ethylene Propylene Dione Monomer)	N/A	\$7	\$154,000	63,800
Coconut/Cork	Italgreen/Geofill	\$7.00	\$154,000	63,800
Cork	Purefill	\$7.10	\$156,200	66,000
TPE(Thermoplastic Elastomer)	EcoMax	\$7.60	\$167,200	77,000
* PRICE DOES NOT INCLUDE SITE WORK FOR PERIMETER CURB, BASE AND UNDERDRAINAGE.				

MAINTENANCE SCHEDULE

INFILL	BRAND	GROOMING	DECOMPACTION	TOP DRESSING (DECOMPOSITION)	SPECIAL MONITORING	IRRIGATION	OTHER
SBR Rubber	Various	per 100 hours of play	every 3-4 years	YES	Annual G-MAX	NO	NO
Coated SBR	Cool Fill	per 100 hours of play	every 3-4 years	YES	Annual G-MAX	NO	NO
Nike Grind	Nike Grind	per 100 hours of play		YES	Annual G-MAX		NO
TPE (Thermoplastic Elastomer)	EcoMax	per 100 hours of play	every 3-4 years	YES	Annual G-MAX	NO	NO
EPDM (Ethylene Propylene Dione Monomer)	N/A	per 100 hours of play		YES			
Rounded Silica Sand	N/A			N/A	Annual G-MAX		
Coated Sand	Envirofill*	per 100 hours of play	Not Required	N/A	Annual G-MAX	NO	NO
Coconut/Cork	Elite/Geofill	per 100 hours of play		Replace 10% infill / 2-3 years	Annual G-MAXX; % Moisture Content / 2x week	YES	Freezes; Slipping hazard (conflicting opinions about de- icing. SHAW recommends salt; sprnturf warns salt would void warranty.)
Coconut/Cork	Limonta Infill Geo	per 100 hours of play	2x / year	Replace 10% infill / 2-3 years	Annual G-MAXX; % Moisture Content / 2x week	YES	Untested (SHAW)
Extruded cork composite (ECC)	Cool Play	per 100 hours of play	2x / year	Replace 10% infill / 2-3 years	Annual G-MAX	NO	Anti-Static treatment required to control particle fly
Cork	Purefill	Need to brush after Heavy Rain	3x / year; every 4-6 weeks	Replace 10% infill / 2-3 years	Annual G-MAX	NO	Cork floats when wet

LIFESPAN/ WARRANTY

INFILL	BRAND	LIFESPAN/ WARRANTY	COMMENTS
SBR Rubber	Various	8 years	
Coated SBR	Cool Fill	8 years	
Shoe Rubber	Nike Grind	8 years	
TPE (Thermoplastic Elastomer)	EcoMax	8 years	
EPDM (Ethylene Propylene Dione Monomer)	N/A	N/A	
Rounded Silica Sand	N/A	N/A	
Coated Sand	Enviro Fill*	16 years	Can be re-used over two life cycles of Field
Coconut/Cork	Italgreen, Geofill	8 years	Proprietary limitations may apply; Maintenance limitations may vary between sy acceptable to shaw sports yet would void sprinturf warranty; requires 30% mois
Coconut/Cork	Limonta Infill Geo	8 years	
Extruded Cork Composite (ECC)	Cool Play	8 years	
Cork	Purefill	8 years	



SELECT INSTALLATIONS

INFILL	BRAND	LOCATION	INSTALLATION DATE	OWNER FEEDBACK	
SBR Rubber	SPORTEXE	Capuano Field, Somerville (HMFH/CRJA)	2004		Market leader wide; 12,000-
Coated SBR	Cool Fill, Sprinturf	Buckingham, Browne & Nichols (BBN)	Summer 2015	"Players love it. Very happy; positive pr/selling point for prospective students"	N/A
Nike Grind	Nike Grind	N/A	N/A	N/A	N/A
TPE (Thermoplastic Elastomer)	Sprinturf	Sprague School, Town of Wellesley	N/A	N/A	N/A
TPE (Thermoplastic Elastomer)	EcoMax	N/A	N/A	N/A	N/A
EPDM (Ethylene Propylene Dione Monomer)	N/A	N/A	N/A	N/A	N/A
Rounded Silica Sand	N/A	N/A	N/A	N/A	N/A
Coated Sand	Envirofill*	70 Installations; See Reference List			
		Newburyport HS	in construction		
		South Windsor HS, Ct; NYC Parks; Wellesley College Field Hockey (2008)			
Coconut/Cork	Italgreen Geofill	SHAW Sports - Five (5) US Installations: Shady Hill School (2011); Pleasantville School, NY	2011-2015	"Very satisfied with field despite added maintenance; cork migration after rain, requires brushing; frozen conditions have not impacted playability; soft/natural feel; not irrigated"	Over 500 inst shaw sport ho installations 2 installations (
Coconut/Cork	Limonta GeoPlus	Fessenden School; Brunswick School, CT	2015	"August/September 2015 installation; limited use to date; best field ever played on; noticeably cooler; not irrigated yet"	Over 200 Lim
Coconut/Cork	Limonta GeoPlus	HELLAS: Ten (10) US Installations, Lakelands, Gaithersburg, MD; University of Nebraska	2014		Over 200 Lim
Extruded Cork Composite (ECC)	Cool Play	Universities of AZ, GA, MD, Tulsa			
Cork	N/A	University of AZ	2014		

OTHER
; thousands of fields world- us installations
allations worldwide; see of & cold weather 006-2013; see field turf europe, 2008-2013)
onta installations
onta installations

PROS/CONS

INFILL OPTION PROS

CONS

	COATED SBR	LOW COST PREMIUM	NEGATIVE SBR PERCEPTIONS
•	NIKE GRIND	NOT SBR	LACK QUALITY CONTROL
•	TPE	VIRGIN MATERIAL	HIGH COST PREMIUM
•	EPDM	VIRGIN MATERIAL	COST/QUALITY CONTROL
	COATED SAND	PRICE/LIFESPAN/LO-MAINT	LOW RESILIENCY/FEEL
	COCONUT/CORK	LIKE NATURAL/REDUCED HEAT	HIGH COST/MAINTENANCE
•	CORK	LIKE NATURAL/REDUCED HEAT	COST/MAINTENANCE/LIFESPAN

PROS & CONS

INFILL	BRAND	PROS	CONS
SBR Rubber	ASTROTURF; FIELDTURF; SHAW SPORT; SPRINTURF	High resiliency; low cost; post consumer recycled product reduces tires from waste stream	Variable quality source material; public percept impact; new tire odor
Coated SBR		High resiliency; low cost; post consumer recycled product reduces tires from waste stream	Variable quality source material; public percept impact; new tire odor
Nike Grind	Nike Grind	Not "SBR"; less public perception of health risks; post consumer recycled product; good resilience and shock absorption	Limited supply; unknown control over source o
TPE (Thermoplastic Elastomer)	Sprinturf; EcoMax	High Resiliency - good shock absorption; virgin material - raw materials can be controlled; slight heat reduction	High cost; limited availability; round particles ca on sidewalks or tracks; improper formulation ca issues
TPE (Thermoplastic Elastomer)			
EPDM (Ethylene Propylene Dione Monomer)	N/A	Virgin Material - control of raw materials; high to medium resiliency depending on filler level; can be colored (FT)	Similar to tpe, but high filler level can result in ch degradation of materials; expensive; higher qual imported from europe;improper crosslinking can virgin material
Rounded Silica Sand	N/A		
Coated Round Sand	Envirofill*	Proven material; 70+ installations; manufactured from known materials and is reusable; coating locks silica dust; microbe protection; durable/consistent; low cost reduces heat; no special maintenance; exempt from ca prop 65 list	No Resiliency - low shock absorption; requires recommended for stability
Coconut/Cork	Elite/Geofill; Limonta Infill Geo; Limonta GeoPlus	Natural Product - not chemically produced; palying characteristics similar to naturalturf; retains water for evaporative cooling	Limited installation examples in united states; h extra maintenance/irrigation; playability impact when wet; freezes; decomposes/migrates; flies weed control; requires shock pad
SBR Rubber with organic	Cool Play, FIELD TURF		
Extruded Cork Composite (ECC)	CoolPlay	Organic material on top where athletics come into contact;durable, shock absorbing; proven heat reduction	Crumb rubber still utilized in system; breakdow virgin maerial
Cork	Pure Fill	Fully organic material; good compression; proven heat reduction; no water needed; looks like natural soil; no smell	Low density allows migration; need to manage watering; requires pad or combination with sbr;

tion of potential health
tion of potential health
of supply; waster from asia
an create slipping problems an lead to premature aging
halking and advanced lity materials must be h lead to premature aging;
pad; thatch layer
high cost vs. Sbr; requires ted by weather: saturates s away when dry; requires
vn of top cork over time;
static cling; may require ; limited availability

STUDY OF EXISTING TREES



EXISTING TREES TO REMAIN AND BE PROTECTED



ANALYSIS OF EXISTING TREES

