

DECEMBER 1, 2021

Nantucket Public Schools Campus Athletic Improvements

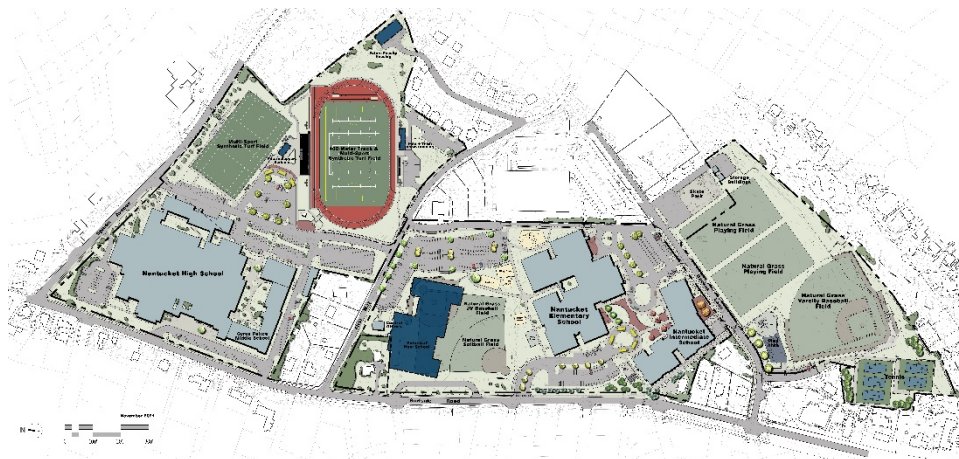
Project Description and Discussion:

Campus Masterplan

Beginning in 2013, Nantucket Public Schools began the master planning efforts to improve current athletic facilities on the 45-acre campus. The fields behind the high school were constructed in 1956; Backus Lane fields were constructed in 2008.

The planning effort was temporarily suspended in 2014, given the critical need to build the Nantucket Intermediate School. The estimate for construction for the athletic upgrade project in 2013 was approximately 8M, now it has nearly doubled.

The updated masterplan addresses current athletic facility needs and identifies the location of a potential new middle school, faculty housing, and other future athletic facility improvements. While current NPS enrollment counts do not indicate an enrollment growth similar to what NPS faced in 2013-2014, the masterplan does indicate the optimum location of a new facility if and when the need arises.



Project Description / Summary of the proposed project components

Key components of this phase of the campus improvements include:

- National Federation/MIAA certified 400-meter running track with 8 sprint lanes, 6 distance lanes
- Two multi-sport synthetic turf fields, playing widths of 210' x 360' and 210' x 330'
- Upgraded athletic field lighting for the primary football/lacrosse field
- Code compliant, accessible 980-seat grandstand and press box
- Relocated irrigated, natural grass baseball field
- Five new post-tensioned concrete tennis courts
- 60 additional campus parking spaces

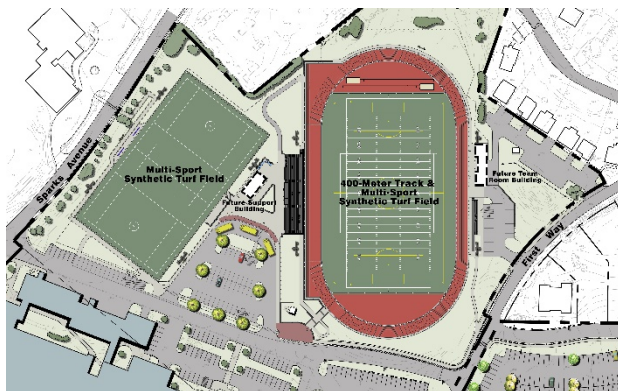
Note that the campus masterplan includes areas for future facilities, including restrooms, team rooms, concessions areas, and storage. While these future buildings are not included in this phase of work, many of the supporting utilities will be installed during this project phase.

Programmatically, bringing the growing tennis program back on campus allows almost all athletic programs to remain on/adjacent to campus.

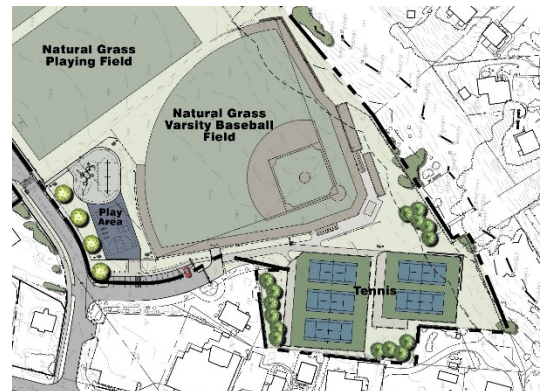
Nantucket is one of the few remaining high schools that does not have a synthetic turf field. However, when compared to other Massachusetts Public Schools, NPS has student athlete involvement of approximately 30% more than the state average. Along with middle & high school outdoor sports, all spring and fall gym classes, some academic classes, and year-long recess further contribute to not only scheduling conflicts between teams but contributes to the overuse and wear the fields suffer. Synthetic fields allow for 2.5-times more use, with less wear, and greater playability during/after weather events than natural grass fields, allowing NPS to maximize field availability on its limited amount property.

We believe Nantucket is the last public high school in the Commonwealth with a cinder track.

In general, the proposed improvements would bring the facilities up to current public high school standards – not beyond what other municipalities currently provide.



Proposed Phase 9 Improvements



Proposed Phase 9 Improvements

Schedule

Final design and engineering is scheduled to be completed by the end of 2021.

Bidding is scheduled to occur in January/February 2022, allowing the proposed vote at ATM2022 - reflecting actual bids, not estimated costs.

Construction is anticipated to commence as soon as funding becomes available in July 2022. The goal is to have the track and field #1 ready for use by September 2022, to alleviate pressure on the existing natural grass fields. Individual construction milestones are being established in coordination with the Athletic Department to ensure that construction of the fields will not unduly impose upon ongoing athletic events or other campus-activities.

All improvements are projected to be completed by September 2023.

Project Costs

This project is currently estimated to cost \$17.5 million.

With the \$1.1 million in available funding, the request at ATM2022 totals \$16.4 million.

Project costs include construction costs, contingencies, escalation, project oversight and inspection during construction, final engineering and permitting, testing laboratory fees, and other miscellaneous expenses.

The project will NOT take away from the General School Budget.

NO money will be taken away from staff positions, curriculum materials, or general building improvements.

The total project cost has been established, based on the recommendations from Ryder Leavitt Bucknall, an independent professional cost estimator with experience on the island.

Project Permitting

The project has been awarded permits from the Conservation Commission (for the Backus Lane athletic improvements), and the Historic District Commission.

Laboratory Testing – Baseline existing conditions

Nantucket Public Schools have sampled topsoil from the existing grass fields and analyzed these samples for metals and for PFAS. These soils were found to contain higher levels of these chemicals than are found either in the synthetic turf or in the southern pine wood infill. This is because topsoil receives contaminants from the atmosphere due to rainfall, snowfall, and deposition of dusts.

Soil testing for PFAS24. Click [here](#) for results.

Soil testing for metals. Click [here](#) for results.

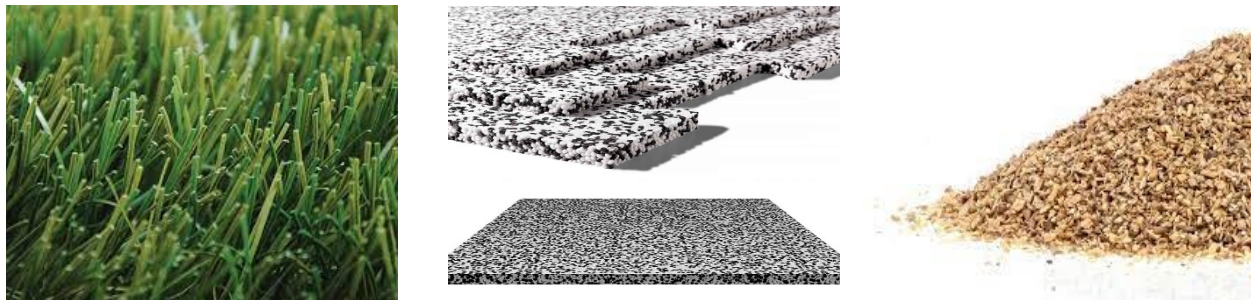


Synthetic Turf System Components

The components of the proposed synthetic turf fields have been chosen to provide excellent performance, to optimize field surfaces, to protect athletes' health & safety, and to protect the environment.

Similar to the components being proposed for Martha's Vineyard Regional High School, the proposed turf for both fields is a product called GreenFields, made by TenCate or an approved equal (see: <https://greenfieldsusa.com/greenfields/part-of-tencate/>). Any approved equal turf product must meet all testing results/requirements that were performed for the proposed MVRHS field; the proposed infill is a product called Brockfill (see: <https://www.brockusa.com/brockfill/>), which consists of engineered southern pine wood particles.

To protect player's safety, a shock attenuation pad [Brock SP17] will be installed underneath each synthetic field (see: <https://www.brockusa.com/shock-pads/>). The product is recyclable, certified *Cradle-to-Cradle*, and is guaranteed to perform for a minimum of two turf cycles.



The turf manufacturer will be responsible (via a bonded requirement) for recycling the turf at the end of its useful life (typically, 12-15 years). If a recycling facility similar to the GBN-Artificial Grass Recycling (GBN-AGR) facility in the Netherlands is not online in the United States by 2037, the turf will be shipped to GBN-AGR for recycling (see: <https://www.gbn.nl/producten/circulair-kunstgras/>).

The Brock infill will be composted, if not able to be reused.

Because the proposed infill is southern pine wood particles, and not crumb rubber, the infill is not, and cannot break down into, a microplastic. To further protect any migration of turf system components, particle traps will be installed.

Laboratory test results of the proposed synthetic turf materials [turf, pad, infill, and glues] were performed within the last year by Alpha Analytical Laboratories; and can be accessed [here](#).

As indicated above, the analytical chemical results show that the proposed synthetic field-materials contain smaller (indeed, typically undetectable) concentrations of lead and other heavy metals than are found on the existing dirt and natural grass fields. The data indicates that the proposed field-materials will not contaminate groundwater and will not affect children's' health or wellbeing.

Please note that small concentrations of a perfluorinated copolymer, PVDF-HFP, are used in manufacturing the synthetic grass blades. This fluoropolymer is similar to that used in surgical sutures, implantable meshes, and many other materials, because it is biocompatible and inert. This copolymer does not dissolve in rainwater; will not contaminate groundwater, surface water, or ambient air; and will not permeate skin or clothing.

Field Temperature

On hot and sunny days, synthetic turf fields can become hotter than natural grass fields. Of course, the same is true of paved surfaces, such as tennis and basketball courts.

NPS abides by standard MIAA guidelines regarding the scheduling/rescheduling of outdoor athletic activities at various heat/humidity levels. (see:

http://miaa.net/gen/miaa_generated_bin/documents/basic_module/MIAA_Heat_Modification_Policy_Revisions_FINAL_11619.pdf).

Maintenance Costs

Synthetic turf fields require a lot less maintenance than natural grass fields, but they are not maintenance-free.

Typical maintenance of synthetic turf fields includes removal of leaves/pine needles/etc., maintaining consistent infill depths, and supplementing infill every 2-3 years. Contractors project requirements include providing all required grooming equipment, including training on the operation of the equipment. Depending on the specific turf product and field usage, a deeper aeration of the infill material may be required every 4-5 years. No chemical treatments are required to maintain the turf fields.



Typical Synthetic Turf Grooming/Maintenance Equipment

Synthetic turf fields do not require mowing and lining/stripping.

They do not require irrigating, which reduces the amount of water that is consumed and eliminates the cost of irrigation system maintenance and servicing.

They do not require the use of fertilizers or herbicides.

They do not require the need for supplemental overseeding and sodding to repair worn areas.

*Total maintenance manhours/year for two synthetic turf fields = (224) hours

Generally, the current maintenance activities on the two natural grass fields include:

- Four applications of fertilizer/grub control each season (approximately 3,500 lbs of fertilizer).
- One application of lime each season (approximately 1,250 lbs of lime).
- Overseeding and re-sodding all worn areas – spring, summer, fall.
- Irrigation of fields – 1" per week (approximately 105,000 gallons of water / year).
- Irrigation system maintenance, including spring startup, adjustments, and fall shut-down.
- Mowing fields three times each week during the active growing season – 24 weeks = 72 mowings.

-Lining / striping the fields minimum one time each week (twice during active sport seasons).

*Total maintenance manhours/year for two natural grass fields = (983) hours

Nantucket Public Schools - EXISTING Field Use Matrix

Nantucket, Massachusetts
11/18/2021

Site	Field Type	Type/Use	Spring		Summer		Fall		Winter		Yearly Totals		Recommended	
			Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	
Nantucket High School	Football/Lacrosse Field	Football	0	0			260	85			260	85		
		Lacrosse	180	45			0	0			180	45		
		Soccer	0	0			192	45			192	45		
		Misc. Summer Use			36		0	0			36	0		
		P.E. / Recess	250				250				500	0		
		Community School					0	0			0	0		
				430	45	36	0	702	130	0	0	1168	175	0
				Spring		Summer		Fall		Winter		Yearly Totals		Recommended
	Upper Fields	Baseball	150	25	0	0	0	0			150	25		
		Field Hockey	0	0	0	0	192	50			192	50		
		Soccer	0	0	0	0	100	20			100	20		
		P.E. / Recess	250				250				500	0		
				400	25	0	0	542	70	0	0	942	95	0
				Spring		Summer		Fall		Winter		Yearly Totals		Recommended
	NES Natural Grass Fields	Soccer	0	0			160	45			160	45		
		JV Baseball	100	15							100	15		
		Baseball (Mid. School)	100	20							100	20		
		Varsity Softball	400	55							400	55		
P.E. / Recess		180				180			160	520	0			
Maintenance/Recovery										0	0			
			780	90	100	0	340	45	160	0	1380	135	0	

Site	Field Type	Type/Use	Spring		Summer		Fall		Winter		Yearly Totals		Recommended	
			Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	
Backus Lane	West Playing Field	Lacrosse	48	25							48	25		
		Soccer					64	25			64	25		
		P.E. / Recess	160				160			160	480	0		
		Community School	40		360		40				440	0		
				248	25	360	0	264	25	160	0	1032	50	0
				Spring		Summer		Fall		Winter		Yearly Totals		Recommended
	East Playing Field	Lacrosse	48	25							48	25		
		Soccer					64	25			64	25		
		P.E. / Recess	160				160			160	480	0		
		Maintenance/Recovery									0	0		
Community School		40		360		40				440	0			
			248	25	360	0	264	25	160	0	1032	50	0	

Table 1. Expected Field Condition Based on Hours of Field Use per Year

Expected Field Condition	Field Use (Hours per Year)
Sustained good field conditions	200 hours or less
Good field conditions with some thinning of the turf and localized wear areas	400 to 600 hours
Fair field conditions; expect significant thinning and wear.	800 to 1,000 hours
Significant turf loss, field surface damage, increased potential for athlete injury	More than 1,000 hours

Chart from article entitled "Maximizing the Durability of Athletic Fields"; published January 2010
Dr. Grady L. Miller; Professor and Extension Specialist – Crop & Soil Sciences
North Carolina State University

Nantucket Public Schools - PROPOSED Field Use Matrix
 Nantucket, Massachusetts
 11/18/2021

Site	Field Type	Type/Use	Spring		Summer		Fall		Winter		Yearly Totals		Recommended Hours	
			Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	Athletes		
Nantucket High School	Synthetic Turf Field 1	Football	0	0			260	85			260	85		
		Lacrosse	180	45			0	0			180	45		
		Soccer	0	0			192	45			192	45		
		Misc. Summer Use			36		0	0			36	0		
		P.E. / Recess	250				250				500	0		
		Community School			100		0	0			100	0		
				430	45	136	0	702	130	0	0	1768	175	0
				Spring		Summer		Fall		Winter		Yearly Totals		Recommended Hours
				Type/Use	Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	
		Synthetic Turf Field 2	Lacrosse	150	40	0	0	0	0			150	40	
			Field Hockey	0	0	0	0	192	50			192	50	
			Soccer	0	0	0	0	192	40			192	40	
	P.E. / Recess		250				250				500	0		
			400	40	0	0	634	90	0	0	1034	130	0	
	NES Natural Grass Fields	Soccer	0	0			160	45			160	45		
		JV Baseball	100	15							100	15		
		Baseball (Mid. School)	100	20							100	20		
		Varsity Softball	400	55							400	55		
		P.E. / Recess	180				180			160	520	0		
		Maintenance/Recovery									0	0		
		Community School			100						100	0		
			780	90	100	0	340	45	160	0	1380	135	0	

Site	Field Type	Type/Use	Spring		Summer		Fall		Winter		Yearly Totals		Recommended Hours	
			Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	Athletes		
Backus Lane Fields	New Baseball Field	Baseball	150	25	0	0					150	25		
		Soccer					100	20			100	20		
		Physical Education									0	0		
		Maintenance/Recovery									0	0		
				150	25	0	0	100	20	0	0	250	45	0
				Spring		Summer		Fall		Winter		Yearly Totals		Recommended Hours
				Type/Use	Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	Athletes	Hours	
		West Grass Playing Field	Lacrosse	48	25							48	25	
			Soccer					64	25			64	25	
			P.E. / Recess	160				160		160		480	0	
			Community School	40		360		40				440	0	
				248	25	360	0	264	25	160	0	1032	50	0
	East Playing Field	Lacrosse	48	25							48	25		
		Soccer					64	25			64	25		
		P.E. / Recess	160				160		160		480	0		
		Maintenance/Recovery									0	0		
		Community School	40		360		40				440	0		
			248	25	360	0	264	25	160	0	1032	50	0	
	Tennis Courts	Varsity Tennis	225	35							225	35		
		Community Tennis									0	0		
		P.E. / Recess									0	0		
			225	35	0	0	0	0	0	0	225	35	0	

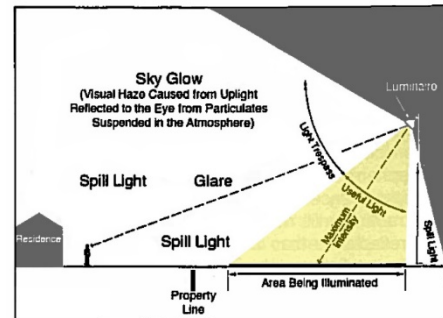
To view full-size charts, click [here](#) and [here](#).

Athletic Field Lighting

Currently, the light fixtures on the football field are mounted at between 45-65' in height. This causes light spill and glare and produces a high uniformity index [inconsistent light spots and dark spots.] The football field lighting is proposed to be upgraded with taller, 80' high poles and new fixtures to improve the lighting distribution while maintaining current levels of illumination.



Existing Athletic Field Lighting



Sky Glow & Spill Light Diagram

400M Track Improvements

This geometry of the proposed track is compliant with all National Federation and MIAA regulations. The 400M track will contain 6 distance lanes and 8 sprint lanes, a very popular configuration for public high schools.

Both 'D' zones are proposed to be synthetically surfaced for long, triple and high jump events.

The proposed impervious track surfacing system included a paved base mat installed over bituminous concrete pavement, with sealed color spray system at running surface. Resurfacing of the track is generally recommended every 6-10 years. Other than maintaining a clean surface, no other maintenance treatments/activities are required.



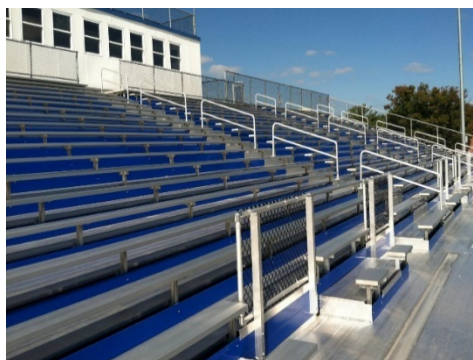
Typical 400-meter Running Track

Project accessibility improvements

The existing grandstand and press box spaces are not fully accessible and do not provide the code-required handicap seating.

The proposed aluminum grandstand and press box will be fully accessible with a “top and bottom loaded” system. Handicap seating will be evenly distributed throughout the seating areas. The press box will be accessible without the need of a costly lift/elevator/ramp system.

The proposed new parking areas will provide additional accessible parking spaces and improved emergency access to the field.



Typical Accessible and Companion Grandstand Seating

Tennis Court Construction

Five courts are proposed to properly operate a tennis program. The courts are designed with continuous 10' high chain link fencing and include areas for spectator bleachers for viewing of matches/play.

The courts will be made of post-tensioned concrete, which is a form of reinforced concrete in which steel tendons are put under tension or "stressed" once the concrete has reached a specific strength. This provides a sturdy and durable playing surface that can withstand the rigors of frequent use. The courts carry a 20-year warranty from cracking, increased resistance to settling and/or heaving, and more controlled slope for better drainage and playability.

The courts are not proposed to be lighted.



Typical Post-Tensioned Concrete Tennis Courts