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# Synthetic Turf Improvement Projects

City Council Programs and Services Committee, City of Newton

**CDM  
Smith**



# AGENDA

- ATHLETIC STAKEHOLDERS AND NEEDS
- BALANCED APPROACH TO MATERIAL SELECTION
- NEWTON HS SYNTHETIC TURF REPLACEMENT PROJECT
- MATERIAL EVALUATION, CONSIDERATIONS AND SELECTION

# Turf Field Needs for Both High Schools

## NEWTON SOUTH HS TEAMS

### FALL:

- 3 GIRLS SOCCER TEAMS (9<sup>TH</sup>, JV, VARSITY)
- 3 BOYS SOCCER TEAMS (9<sup>TH</sup>, JV, VARSITY)
- 3 FOOTBALL TEAMS (JV, VARSITY)
- 3 FIELD HOCKEY TEAMS (9<sup>TH</sup>, JV, VARSITY)
- 2 CROSS COUNTRY TEAMS ON TRACK

### WINTER:

- 2 GIRLS TRACK TEAMS (WEATHER PERMITTING)
- 2 BOYS TRACK TEAMS (WEATHER PERMITTING)

### SPRING:

- 3 GIRLS LACROSSE TEAMS (ALL LEVELS)
- 3 BOYS LACROSSE TEAMS (ALL LEVELS)
- 2 OUTDOOR TRACK (VARSITY, JV)
- 2 MIDDLE SCHOOL TRACK TEAMS
- 1 UNIFIED TRACK TEAM
- POTENTIAL RUGBY TEAMS

UP TO 11 PRACTICES/GAMES EACH WEEKDAY TO SCHEDULE

## NEWTON NORTH HS TEAMS

### FALL:

- 3 GIRLS SOCCER TEAMS (9<sup>TH</sup>, JV, VARSITY)
- 3 BOYS SOCCER TEAMS (9<sup>TH</sup>, JV, VARSITY)
- 3 FOOTBALL TEAMS (9<sup>TH</sup>, JV, VARSITY)
- 3 FIELD HOCKEY TEAMS (9<sup>TH</sup>, JV, VARSITY)
- 2 CROSS COUNTRY TEAMS ON TRACK

### WINTER:

- 2 TRACK TEAMS, WEATHER PERMITTING

### SPRING:

- 3 GIRLS LACROSSE TEAMS (ALL LEVELS)
- 3 BOYS LACROSSE TEAMS (ALL LEVELS)
- 2 OUTDOOR TRACK (VARSITY, JV)

UP TO 12 PRACTICES/GAMES EACH WEEKDAY TO SCHEDULE

# Athletics at HS Turf Fields & Albemarle Sports Complex

## Winter:

- Oxford Rd. Neighborhood soccer
- Juventus Boston
- Newton Area Flag Football League Clinic
- Newton Girls Soccer
- Newton Youth Soccer
- Boston Villa Soccer club
- BOH & Day Middle Schools
- General Park and School Field Users

## Spring:

- B.A.T. Training
- Buda Youth Frisbee
- J. Lowe Soccer Camps (BC clinic)
- Newton Boys Lacrosse league
- Boston FHC (field hockey clinic)
- Newton Area Flag Football League Clinic
- Eastern Mass Women's Soccer (Suburban Thunder games)
- USA Track and Field New England – outdoor track
- Newton Special Athletes – outdoor track
- Newton Girls Soccer
- Newton Youth Soccer
- Over the Hill Soccer League
- Newton Girls lacrosse League
- Prime – workouts
- Tanrikulu resident group
- Eastern mass Women's Soccer League
- Newton Little League
- Newton LL Seniors
- Senior Youth Baseball
- Newton Girls Softball
- F.A. Day Middle School Athletics;
- Prime Baseball League
- Babe Ruth Baseball Tryouts
- Adult Cricket
- Extra Innings Baseball Clinic
- BOH & Day Middle Schools
- General Park and School Field Users

## Summer:

- Eastern Mass Women's Soccer (Suburban Thunder games)
- BUDA Youth Frisbee
- Boston FHC (field hockey clinic)
- Newton Community Ed summer sports clinics
- REV Lacrosse
- Newton Special Athletes – outdoor track
- Bertuzzi Soccer Training
- NN/NS Football Clinic
- North fall pre-season training and tryouts
- Newton Little League
- Babe Ruth Baseball
- Adult Cricket
- Newton Girls Softball
- Newton Community Ed – baseball
- Boys and Girls Club
- Extra Innings Baseball Clinic
- Mustang Youth Football
- American Legion Baseball
- Prime Baseball
- Juventas Youth Soccer
- BOH & Day Middle Schools
- General Park and School Field Users

## Fall:

- Newton Mustangs (youth football)
- Endurance Youth Field Hockey
- Newton Boys Lacrosse League
- Newton Area Flag Football League Clinic
- Over the Hill Soccer league
- Eastern mass Women's Soccer League
- Newton Girls Soccer
- Newton Youth Soccer
- Newton Mustangs Football game
- Newton Little League
- Newton LL Seniors
- Adult Cricket
- Newton Girls Softball
- Mustang Youth Football
- F.A. Day Middle School Athletics
- Extra Innings Baseball Clinic
- Lasell Baseball
- NNHS Baseball captain's practice
- BUDA Youth Frisbee
- BUDA Adult Frisbee
- BOH & Day Middle Schools
- General Park and School Field Users

# Synthetic Turf Replacements & Enhancement

- Synthetic turf field replacements at both high schools
  - NSHS First (Winkler Stadium & Brandeis Rd Field)
- Track Improvements
  - resurfacing at NSHS
  - replacement at NNHS
- Synthetic turf expansion at Albemarle (No Track)
- Standardize synthetic turf materials across all fields



**NSHS WINKLER STADIUM (2023)**



**NSHS BRANDEIS RD FIELD (2023)**



**NNHS TIGER STADIUM (2024)**



**ALBEMARLE CRAFTS ST FIELD (2023-2024)**



# Expanding Play

- Synthetic turf fields:
  - Extended play into the winter months
    - Playable without snow cover in December, January, February & March
- Lighted synthetic turf fields:
  - Additional 3 hours of play per evening in fall and winter
  - Additional 1.5 hours of play per evening in spring and summer
  - Average Annual use expansion: 473 hrs (Based on NSHS Stadium Light Data)



**NSHS WINKLER STADIUM LIGHTS (2020)**



**NSHS BRANDEIS RD FIELD LIGHTS (2022)**



**NNHS TIGER STADIUM LIGHTS (2023)**



**ALBEMARLE LIGHTS (2023-2024)**

## Project History

- Synthetic turf typically needs to be replaced about 8 - 10 years after installation.
  - Repairs can be done to extend lifespan an additional 2-3 years
- Rubberized track surfacing typically needs to be resurfaced about 8 - 10 years after installation
- Newton South HS synthetic turf fields and track
  - constructed in 2009 (13 yrs old)
- Newton North HS synthetic turf fields and track
  - constructed in 2010 (12 yrs old)
- Fields are currently at their “end of life cycle”
  - repairs to extend lifespan of carpet are no longer effective

# Recap of Environmental Monitoring Report at NSHS Stadium

- Reviewed Environmental Monitoring Work in 2014 and testing
- Conservation Commission 2009 Order of Conditions and MassDEP Superseding Order of Conditions (#239-0590)
  - Perform stormwater monitoring for 5 years
  - Monitor crumb rubber migration for 18 months
- 2013: Environmental consultant hired to:
  - Perform stormwater monitoring 3 times
  - Perform crumb rubber inspections
  - Test groundwater in existing 300' deep irrigation wells
- The 2014 environmental report concluded that:
  - The crumb rubber collection drain system was working properly
  - The synthetic field had no impact on groundwater quality
  - No further testing was required



# Newton High Schools Turf Replacements Project Goals

- Winkler Stadium, Brandeis Road Field and Tiger Stadium synthetic turf field replacement
  - Remove and recycle existing turf carpets
  - Remove and dispose of existing Crumb Rubber infill from recycled tires
  - Replace with better and cleaner turf carpet and infill
- Newton North and South track resurfacing
  - Evaluate and patch significant irregularities
  - Respray track surface over existing
- Field collector drains cleaned

# Existing Turf Photos



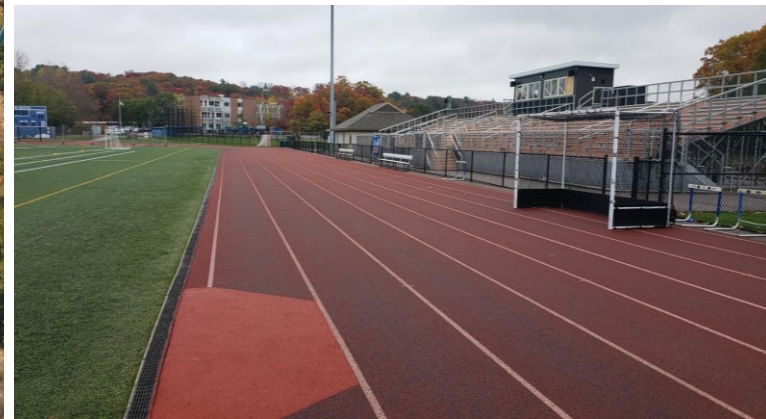
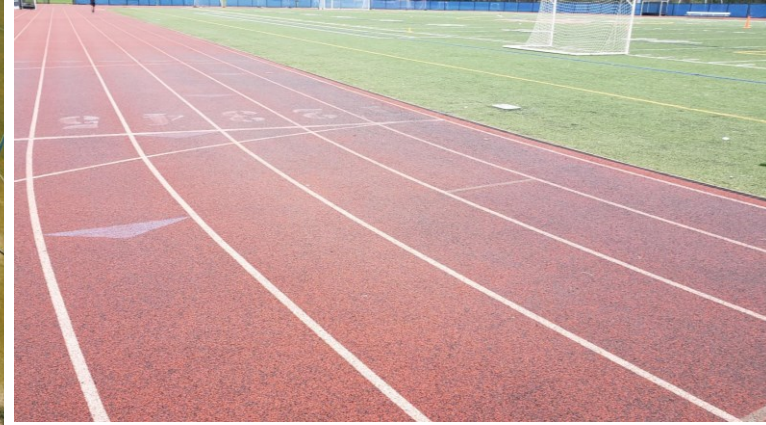


## Existing Turf Photos





# Existing Track Photos at NSHS



# Product Research

- Interviews with Turf manufacturers
  - Shaw Sports
  - Astroturf
  - Field Turf
- Review of synthetic turf system options for multi-purpose sports fields
  - Turf carpet
  - Infill materials (organic and non-organic)
  - Shock pads (when required)

# City Of Newton Synthetic Turf Field Ordinance (Ord. No. Z-96, 11-07-11)

Sec. 2-205.

Installation of synthetic in-filled turf athletic fields on city-owned property. The installation of synthetic in-filled turf athletic fields on city-owned property shall use sustainable, recyclable, lead-free, non-toxic products to the maximum extent feasible. The department responsible for the project, in conjunction with the city's chief procurement officer, shall make the determination of the maximum extent feasible for installation in any particular site. The determination shall take into account the best available technology, cost effectiveness, public health and safety, and environmental risks and benefits, and shall consider each proposed installation in light of site conditions, engineering feasibility, commercial availability, public safety, environmental impact and cost. Cost, however, shall not be the overriding factor in determining maximum extent feasible, and a determination of cost shall include consideration of projected life cycle costs including maintenance, repair, replacement, recycling and/or disposal costs over the estimated useful life of the installation.



# Synthetic Turf Field Surfaces and Materials Selection Based on a Balanced Approach



## Longevity

- Life Span and Warranty
- Quality of Carpet
- Quality of Infill
- Minimal Infill Replenishing



## Maintenance

- Annual Maintenance
- Minimal Infill Displacement
- Minimal Large-Scale Repairs
- Reduced field marking labor



## Player Safety in Turf

- Consistency in GMAX Rating
- Heat Index
- Toxic Chemical Exposure
- Freezing Conditions
- Consistency in Head Injury Criterion (HIC) Rating



## Environmental Impacts

- Minimal Infill Displacement into waterways
- Cleaner Materials
- No need for Watering
- Future End-of-Life Disposal
- PFAS Exposure



## Playability

- Playability
- Shock Absorption
- Minimal Disruption to Use
- Extended Seasonal Use
- Retain Newton Athletic Competitive Edge

# Per- and Poly-fluoroalkyl Substances (PFAS)

- What are PFAS?
  - Large class of man-made chemicals that contain fluorine
- Why is PFAS in the news?
  - Studies suggest potential for adverse health effects at high levels of exposure
- Where are PFAS found?
  - PFAS are used in many consumer products
  - Slow to break down in the environment



<https://www.epa.gov/sites/default/files/press/img/RFU%20Products%20Containing%20PFAS.jpg>

# Material Testing and Disposal

- Turf Manufacturer PFAS testing evaluation
  - Ensure that turf carpet selected is factory tested and acceptable per EPA and California Prop. 65 testing methods and guidelines
- Infill Manufacturer PFAS testing evaluation
  - Ensure that infill selected is factory tested and acceptable per EPA and California Prop. 65 testing methods and guidelines
- Existing Turf Carpet Recycling
  - Ensure that the existing turf carpet being removed is recycled at the turf manufacturing facility

# Recommended Synthetic Turf Field Surfaces and Materials Selection Based on a Balanced Approach

- Turf Carpet:
  - Dual Fiber Turf: Slit Film + Monofilament
    - Fiber height: 2.25"-2.5" to ensure GMAX values
    - Appropriate for: Soccer, Football, Lacrosse, Field Hockey and more!
    - Infill Flyout and Displacement Control
- Infill Mix:
  - TPE + Sand
    - No material Migration
    - Retains consistent GMAX ratings
    - Reduced heat levels compared to Crumb Rubber
    - Minimal annual replenishing required at center field and goals
    - Less susceptible to freezing

## Next Steps

- Finalize Project budget for NSHS Fields
- Permit the work at Newton South HS Stadium with the Newton Conservation Commission (Dec. 2022 Thru Jan. 2023)
- Docket funding request with city council for construction funding for both HS projects (Dec. 2022 Thru Jan. 2023)



Thank you for attending!

For more information, please contact us at: [Athleticfields@newtonma.gov](mailto:Athleticfields@newtonma.gov) Or visit us at [newtonma.gov/parkprojects](http://newtonma.gov/parkprojects)