Montgomery County Public Schools
Artificial Turf
At Albert Einstein High School

Community Presentation January 26, 2017
AGENDA

• PROJECT BACKGROUND

• TIMELINE

• ARTIFICIAL TURF DISCUSSION

• DESIGN CONSIDERATIONS

• QUESTIONS / FEEDBACK
• Current state - Six high schools
  o Richard Montgomery
  o Montgomery Blair
  o Walter Johnson
  o Paint Branch
  o Gaithersburg
  o Wootton
  (Montgomery Blair HS field is installed and owned by M-NCPPC)

• Two additional high schools in pipeline
  o Wheaton (August 2019)
  o Seneca Valley (August 2021)
Private Partnerships

• Montgomery County Board of Education has approved a settlement agreement with Montgomery Soccer, Inc. (MSI)

• MSI will contribute up to $5.2 million to construct new artificial turf fields at Walt Whitman High School, Albert Einstein High School and Julius West Middle School in exchange for access to the fields when not in use by the schools

• MSI will provide $1.2 million to construct an artificial turf field at Albert Einstein High School
Natural Grass and Artificial Turf

Cross-sections

Natural Grass

Artificial Turf

NATURAL GRASS PERSPECTIVE

- Natural Grass Sod
- Rootzone Mix
- Drainage Gravel Layer
- Compacted Subgrade Shaped for Drainage
- Irrigation System
- Field Drainage System with Field Filter Fabric
- Field Drainage Collector

Fiber
Infill (sand/silica)
Backing System
Shock Pad
Aggregate Base / Leveling Layer
Geotextile (optional)
Natural Subgrade (compacted)
Stadium Field Comparison

Walt Whitman

Einstein

Gaithersburg
PROJECT APPROVAL REQUIREMENTS

Approvals Required to Begin Design

• Board of Education Supplement Appropriation Review & Approval
• County Executive Review and Recommendation
• County Council – Education Committee Review
• County Council Action following Public Comments

Approvals Required to Begin Construction

• Required Building Permits
• Construction Contract Approval – Board of Education
PROJECT STEPS/MILESTONES

• Engineering Design
  • Consultant Procurement
  • Natural Resource Inventory/Forest Stand Delineation
  • Stormwater Management Concept
  • Engineered Sediment Control Design
  • Construction Documents

• Project Bidding
• Construction Contract Execution
• Construction
• Warranty Phase
PROJECT TIMELINE

- Project Approval – 4 Months
- Design – 5 Months
- Bid Process – 1 Month
- Contract Award – 1 Month
- Construction – 4 Months

Total Duration – 1 Year & 3 Months
Anticipated Completion – April 2018
Artificial Turf Playability
Other Considerations

- Outdoor recess opportunities increased
- Year-round use
- Watering costs eliminated (Infill Mix Dependent)
- Use of pesticides eliminated
- Potential for additional booster club revenues
Natural Grass vs. Artificial Turf

Playability (hours of Use)

Average Hours
Artificial Turf vs. Natural Grass
## Natural Grass Fields

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower installation costs than artificial turf</td>
<td>Higher annual maintenance costs</td>
</tr>
<tr>
<td>Lower life-cycle costs than artificial turf</td>
<td>Use limited to only necessary sporting events (games only)</td>
</tr>
<tr>
<td>Cooler field temperatures</td>
<td>Practices not permitted</td>
</tr>
<tr>
<td>215 – 470 playing hours*</td>
<td>Off-site practices likely</td>
</tr>
<tr>
<td>Environmental benefits including water quality, soil/erosion control</td>
<td>Irrigation required and application of pesticides and fertilizers</td>
</tr>
<tr>
<td></td>
<td>Off-limits for community use</td>
</tr>
<tr>
<td></td>
<td>Equity Issues concerning quality and maintenance standards</td>
</tr>
</tbody>
</table>

Natural Grass Maintenance

- Mowing
- Line Painting
- Thatching
- Topdressing
## Artificial Turf Fields

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,500 – 3,000 annual use hours*</td>
<td>Higher costs for installation</td>
</tr>
<tr>
<td>Allows for Physical Education class use</td>
<td>Field temperatures high in hot weather</td>
</tr>
<tr>
<td>Allows for high school team and other community organization practices</td>
<td>Re-skinning required every eight to ten years</td>
</tr>
<tr>
<td>Lower annual maintenance costs</td>
<td>Concerns about crumb rubber in-fill mix</td>
</tr>
<tr>
<td>Team practices 500, games 215, community use 1300, unassigned 400</td>
<td>Maintenance costs increases possible as fields age.</td>
</tr>
<tr>
<td>Environmental benefits include limited water use, limited weed control</td>
<td></td>
</tr>
<tr>
<td>Revenue potential</td>
<td></td>
</tr>
</tbody>
</table>

*Actual MCPS/partnership use hours and potential community use hours between hours of 6:00 a.m. and 11:00 p.m.
Artificial Turf Maintenance

Sweeping

Stitching

Gmax Testing
Natural Grass vs. Artificial Turf Field Maintenance Costs

<table>
<thead>
<tr>
<th>Annual Operating Costs</th>
<th>Bermuda Grass</th>
<th>Artificial Turf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grass – overseeding, coring, topdressing, fertilizers/pesticides</td>
<td>$19,000</td>
<td>*$0</td>
</tr>
<tr>
<td>Mowing</td>
<td>$6,000</td>
<td>$0</td>
</tr>
<tr>
<td>Irrigation system maintenance</td>
<td>$1,100</td>
<td>$0</td>
</tr>
<tr>
<td>Field paint, inlaid lines, logo</td>
<td>$7,500</td>
<td>$0</td>
</tr>
<tr>
<td>ATF Maintenance and Gmax testing</td>
<td>$0</td>
<td>$12,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$33,600</strong></td>
<td><strong>$12,000</strong></td>
</tr>
<tr>
<td>Water Costs</td>
<td>$10,000</td>
<td>*$0</td>
</tr>
<tr>
<td><strong>Average Total Operating Costs</strong></td>
<td><strong>$43,600</strong></td>
<td><strong>$12,000</strong></td>
</tr>
</tbody>
</table>

* Costs for weed control and water would be incurred if coconut husk and cork mix in-fill mix is used.
## Natural Grass vs. Artificial Turf

### 10-Year Life Cycle Costs*

<table>
<thead>
<tr>
<th></th>
<th>Natural Grass</th>
<th>Artificial Turf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td><strong>$302,500</strong></td>
<td>$1,200,000</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$ 436,000</td>
<td>$120,000</td>
</tr>
<tr>
<td>Control/enforcement costs</td>
<td>TBD</td>
<td>None</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$738,500</strong></td>
<td><strong>$1,320,000</strong></td>
</tr>
<tr>
<td><strong>Usable hours</strong></td>
<td>2,150</td>
<td>30,000</td>
</tr>
<tr>
<td><strong>Cost per Hour</strong></td>
<td><strong>$343.49</strong></td>
<td><strong>$44.00</strong></td>
</tr>
</tbody>
</table>

*Inflation and other costs escalations not included

** Costs for renovating an existing field

Clarified during presentation. This slide is not representative of product life-cycle cost but rather maintenance costs over a 10 year period.
# Artificial Turf In-fill Mix Options

<table>
<thead>
<tr>
<th>In-fill Mix</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>EcoGrind/Sand (Nike shoe rubber)</td>
<td>Durability, playability, low maintenance costs, equity</td>
<td>Initial costs, availability, heat retention</td>
</tr>
<tr>
<td>Organic Cork/Sand</td>
<td>Playability, heat reduction, public perception, equity</td>
<td>Durability, initial costs, maintenance costs</td>
</tr>
<tr>
<td>Organic coconut/rice/cork</td>
<td>Heat reduction, public perception, equity</td>
<td>Durability, initial costs, maintenance costs, watering costs, dust issues, weed control</td>
</tr>
<tr>
<td>Ecogreen TPE (thermoplastic elastomer)</td>
<td>Durability, playability, lower heat than SBR, low maintenance costs, equity</td>
<td>Initial costs, heat retention, quality control</td>
</tr>
</tbody>
</table>
Other Design Considerations

- Project is a retrofit of the existing field.
- Original installation is not inclusive of current erosion and sediment control laws.
- Anticipate SWM under field. Depth of excavation similar to Wooton HS at five [5] feet.
- Disturbance inside track is approximately 2.4 acres or 104,544 sqft.
- Significant construction project.