



Protecting Your Investment: Maintaining and Managing Athletic Facilities

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Protecting Your Investment: Maintaining and Managing Athletic Facilities

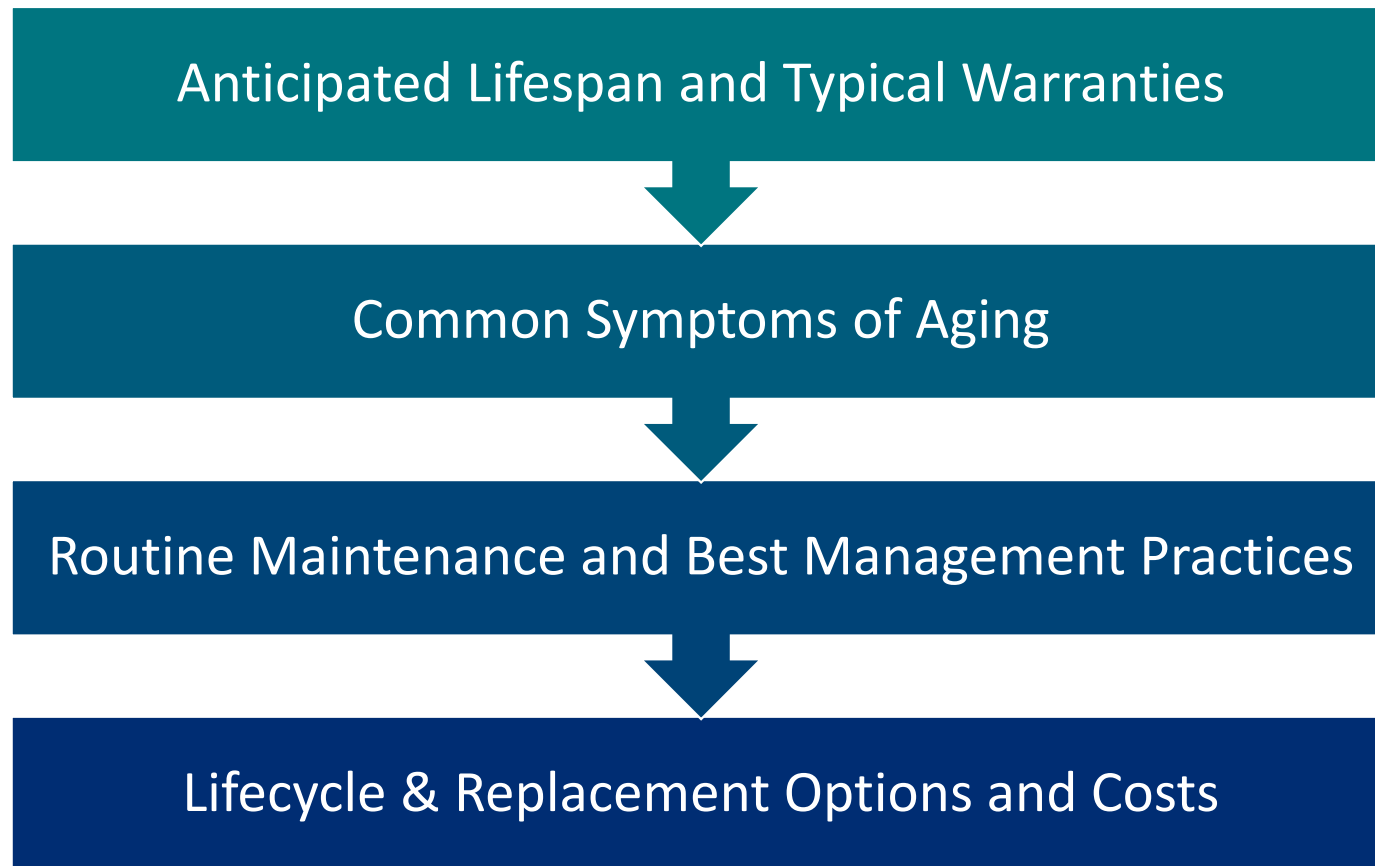
Learning Objectives

Understand the anticipated lifespan, typical warranties, and replacement options for athletic facilities, along with associated costs

Recognize common signs of facility aging and know when to consider repairs or upgrades

Gain insight into routine maintenance and best management practices to extend facility life and ensure safety

Overview





Natural Turf Fields



Lifespan and Warranties

Anticipated Lifespan

- **Highly Variable:** Natural Turf Fields don't come with a set expiration date. Lifespan depends entirely on consistent maintenance, site conditions and level of use.
- A well-maintained natural grass field could be upkeep in perpetuity

Typical Warranty Coverage

- Not typical with natural grass fields due to the importance of maintenance on a fields condition
- Contractor is responsible for maintenance until a uniform stand is established and handed over to the client

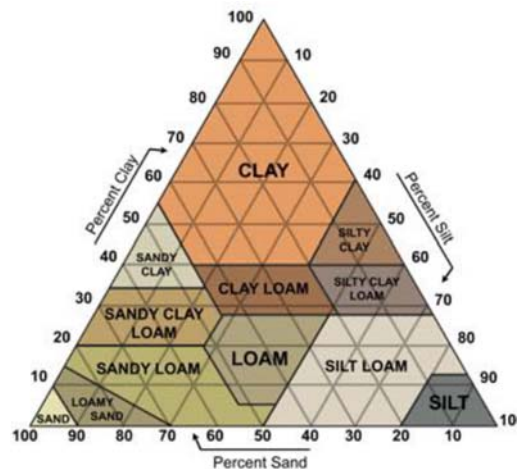
Signs of Degradation

- Non-planarity
- Bald/thin patches
- Weed encroachment
- Poor drainage
- Compaction
- Performance and safety impacts



Site Evaluation – Existing Fields

- Visual observation
- Perform existing conditions topographic survey
- Geotechnical investigation (soil characteristics, groundwater table, infiltration rates)
- Soil testing (nutrient management)
- Review current maintenance practices
- Evaluate the existing stormwater drainage system
- Evaluate the existing irrigation system



Managing a Natural Grass Field

Is field being properly maintained for its intended sport and competition level? (e.g., soccer and lacrosse may prefer low cutting heights for faster ball roll; football may prefer higher cutting heights, etc.)

Manage players using the field for frequency and rotate practice goal areas

Continuously assess the soil conditions (moisture levels, pH, nutrient levels, etc.)

Do you have the proper equipment (mowers, aerators, spreaders, etc.) or are these services being contracted out to others?

Have a good inclement weather policy and a designated person who gives final “play, no-play” decision - it only takes one wet game to destroy a field’s rootzone

Routine Maintenance and BMPs

Regular maintenance:

- Comprehensive maintenance plan is imperative
- Smaller, routine actions will prevent the need for large scale replacement
- Irrigation, weeding, fertilizing, mowing, pest control, erosion control

Things to consider:

- Field resting and rotation
- Know your climate
- Inclement weather policy



Selecting Ideal Growing Medium for the Turfgrass Rootzone

Native soil
field

Modified soil
field

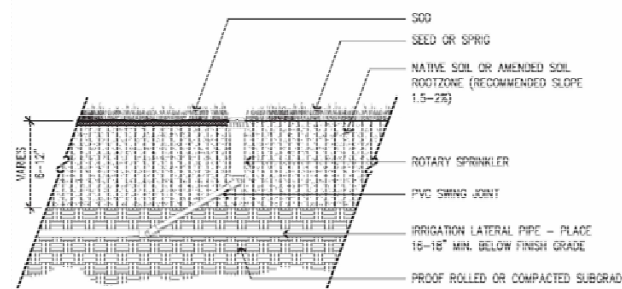
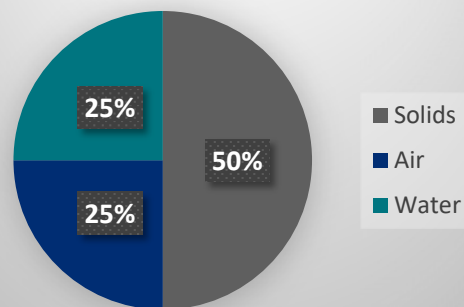
Sand Capped
Soil Field

Sand-based
rootzone

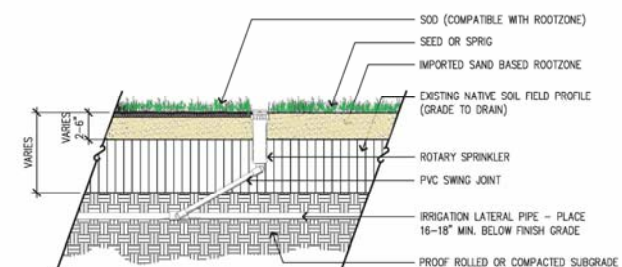
Selecting Most Suitable Turfgrass Species

- Native soil – amended with sand/organics for better growing media. Drain slower.
- Sand Cap – Replacing top 2”-6” with sand (60% - 100%)
- Sand Based – Majority of rootzone is sand (10” typ.)

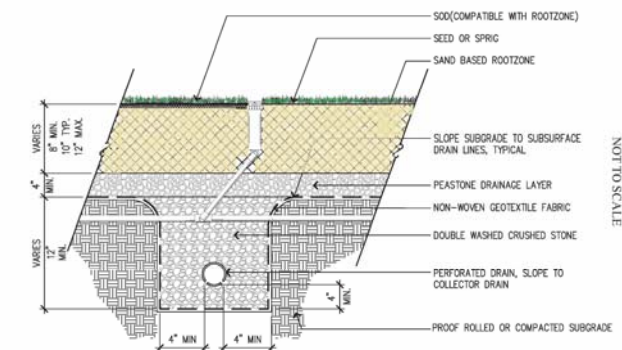
Soil Makeup for Optimal Growth



Natural with
Native or
Amended Soils



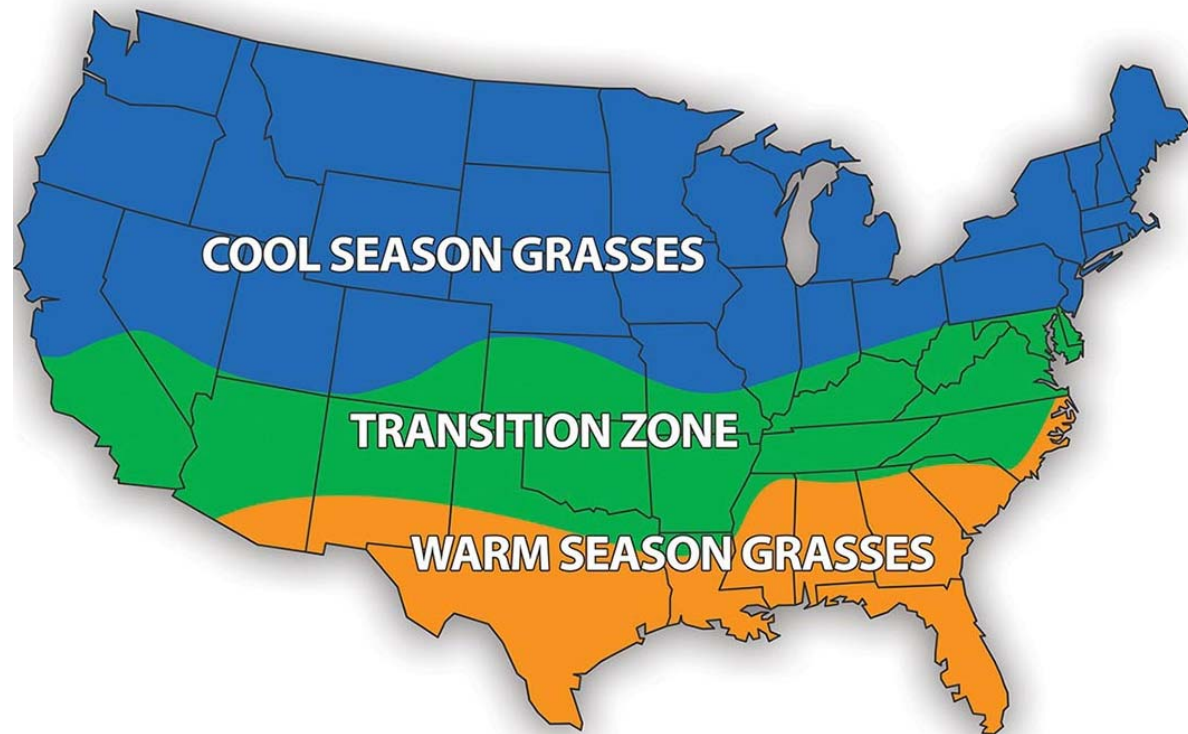
Sand Cap over
Native Soil



Sand-based
Rootzone

Are the Grasses Correct?

- Cool Season Grasses, Transition Zone, or Warm Season Grasses
- Additional Factors: Durability, Water Requirements, level of maintenance
- Seeding vs. sodding



What Kind of Maintenance is Necessary for Longevity and Playability

- Aeration and sand dressing
- Verticutting (removes thatch, better nutrient absorption, better drainage, vertical grass blades)
- Verticutting warm-season grasses (Bahia, Bermuda, centipede, and zoysia grass) in the spring after new growth appears. Cold season grasses like Kentucky bluegrass, perennial ryegrass, fine fescue, and tall fescue grasses in the fall.



Maintenance Guidelines from Sports Field Management Association (SFMA) – Warm Season

Annual Warm Season Maintenance Calendar Overview

Timing suggestions for maintenance practices performed on warm season turfgrasses:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mowing	X*	X*	X*	X	X	X	X	X	X	X	X*	X*
Irrigation			X*	X	X	X	X	X	X	X	X*	
Fertilization				X	X	X	X	X	X	X††		
Plant Growth Regulators					X†	X	X	X	X†			
Cultivation			X**	X	X	X	X	X				
Seeding			X (sod only)	X	X	X (early June)						
Weed Control	X	X	X	X	X	X	X	X	X	X	X	X
Insect Control					X	X	X	X	X	X		
Disease Control	X (monitor for disease)	X (monitor for disease)	X	X	X	X	X	X	X	X	X (monitor for disease)	X (monitor for disease)

* weather dependent

* weather and growth dependent

† optional

†† one application in Oct or Nov

Painting and Marking

- Universities and organizations like SFMA are beginning to study the effects of paint layers on turfgrass
- Over time, the continuous painting of large areas (endzones, logos, etc.) may cause layering to occur within the natural grass field
- Layers of paint may decrease infiltration rates in those areas
- Layers of paint may affect rootzone (growth and shear strength)



Expected Costs

- The average cost for constructing a natural grass athletic field is \$390,000. There are many variables (drainage, existing conditions, topography, etc.)
- The average cost to maintain a natural grass field is \$33,000. There are many variables (native vs sand based, irrigation water source, level of usage, etc.)

Description of Activity
33 Mowings / Season
Aeration, 5 times per year
Fertilizer @ 4.9 #s N / year
Soil Amendments
Herbicide Applications
Pre-emergent
Spot Spray Round-Up, 1 Time / Month
10 Game Field Prep's, Soccer
16 Practice Field Prep's, Football
Overseeding
Growth Regulator, Apr, May, Jun, Jul, Aug
Pre-emergent Applications
Insecticide Applications
Water, 1 Acre Inch Per Week

Source: SFMA example

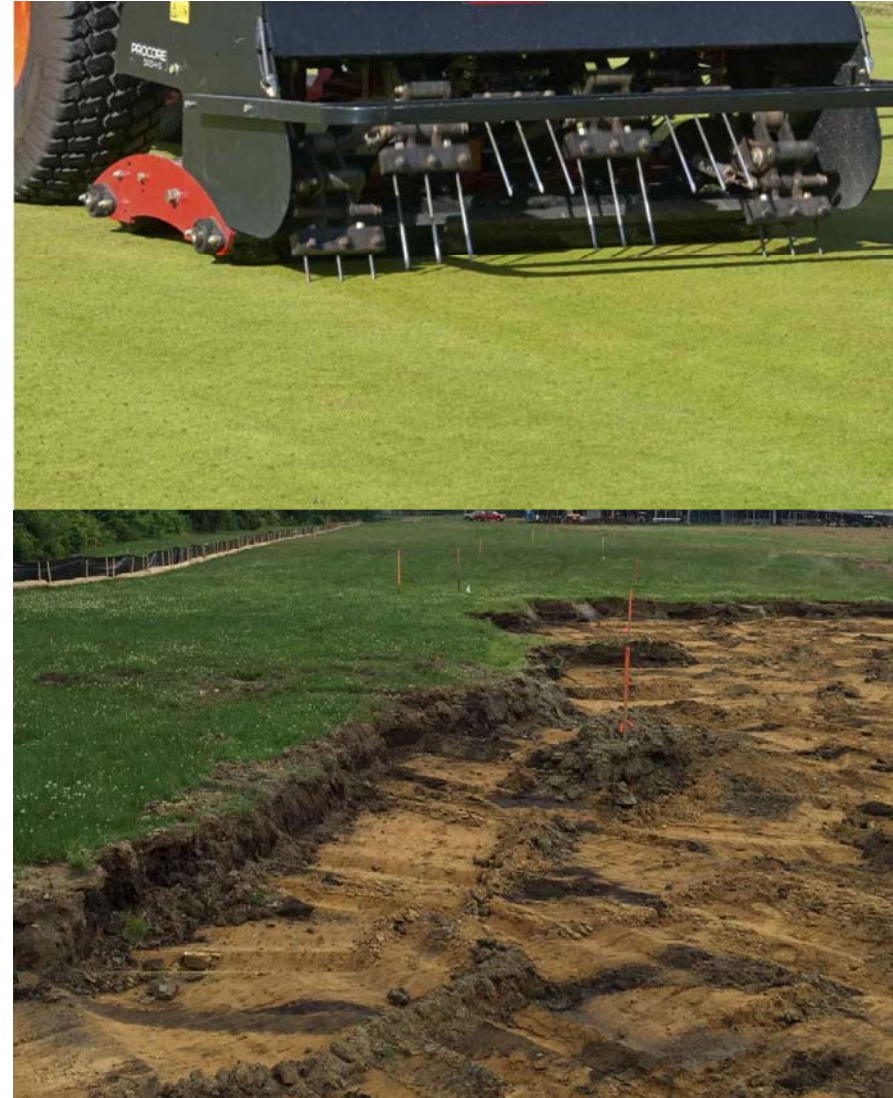
Replacement Options and Costs

Remediation

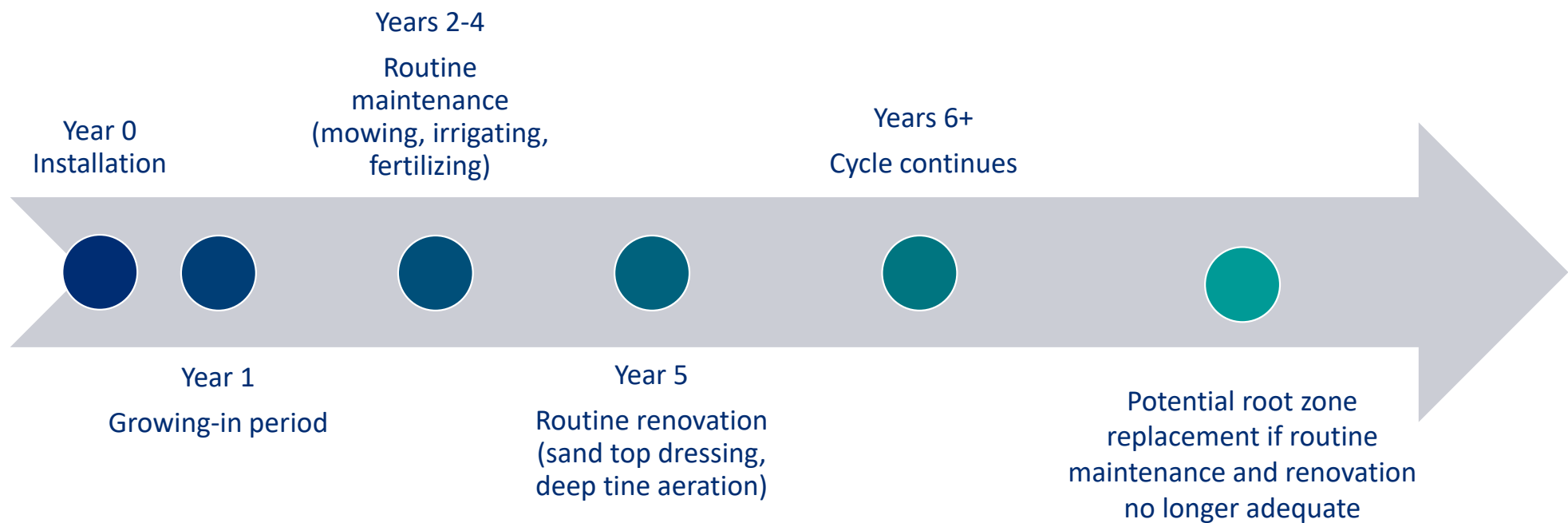
- Deep tine aeration
 - \$10,000
- Sand top dressing
 - \$2,500

Replacement

- Removal and replacement of root zone
 - \$300,000
 - + \$50,000 for under drains
 - + \$75,000 for irrigation system



Typical Natural Turf Field Lifecycle





Hard Court Facilities
Bituminous Pavement



Lifespan and Warranties

Typical warranty coverage

- Contractor guarantee: typical 1 Year from substantial completion
 - Defects in materials or workmanship
- Manufacturer's guarantee: 2 years from substantial completion
 - Checking
 - Fading
 - Discoloration
 - Select environmental/weathering damages
- Anticipated lifespan
 - Useful life of 15 – 20 years



Common Signs of Aging

- Superficial
 - Acrylic Surface Bubbling
 - Acrylic Surface Color Fade
 - Acrylic Surface Peeling
- Moderate
 - Bird Baths, Non-planarity
 - Asphalt Raveling
 - Minor Cracking (Reflex, Shrinkage)
- Severe
 - Structural Cracking
 - Depressions / Rutting



Common Signs of Aging



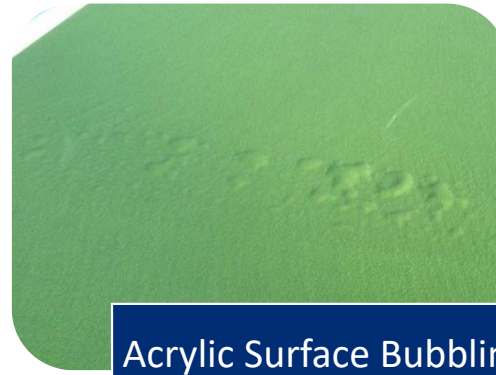
Cracking / Reflexive



Major Cracking



Bird Baths



Acrylic Surface Bubbling

Routine Maintenance and BMPs

Routine Maintenance:

- Surface cleaning (clean spills)
- Crack sealing
- Limit non-athletic use
- Remove nets in offseason

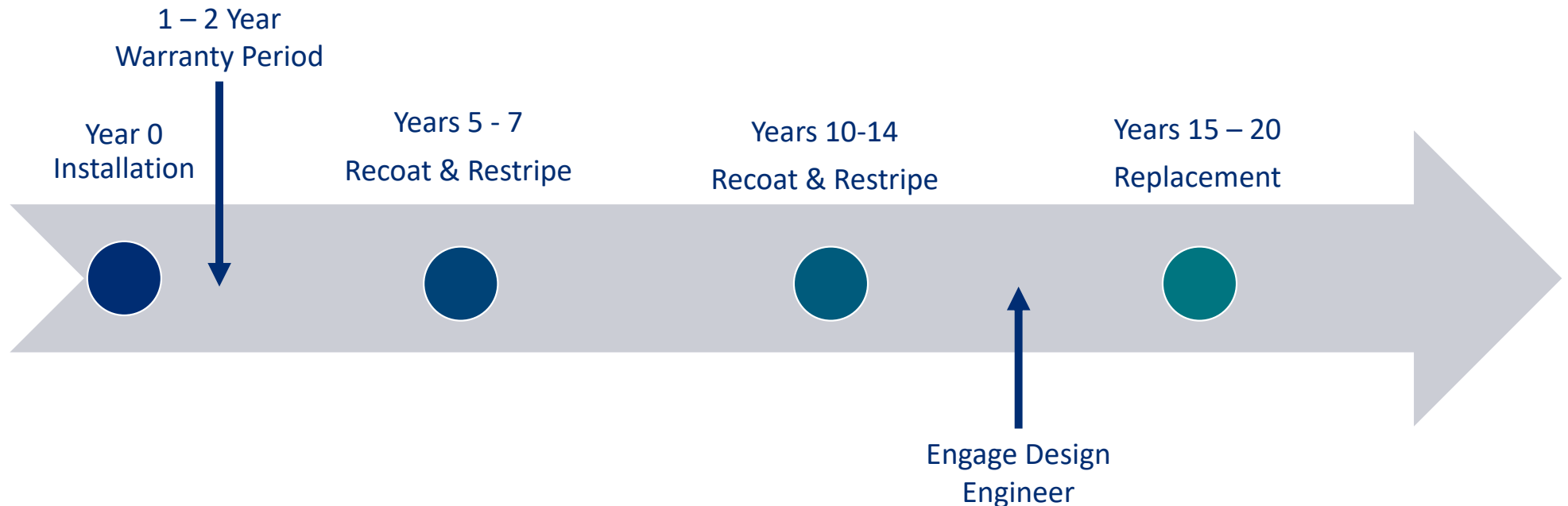
Major Repairs and Maintenance:

- Crack filling and sealing (as needed)
- Fabric based crack repair (as needed)
- Bird bath repair (court patch binder + recoat, restripe)
- Full court recoat and restripe (5-7 years)
 - \$40,000 to \$50,000 (6 Courts)



Typical Bituminous Hard Court Lifecycle

<- Routine Maintenance Throughout Lifecycle ->

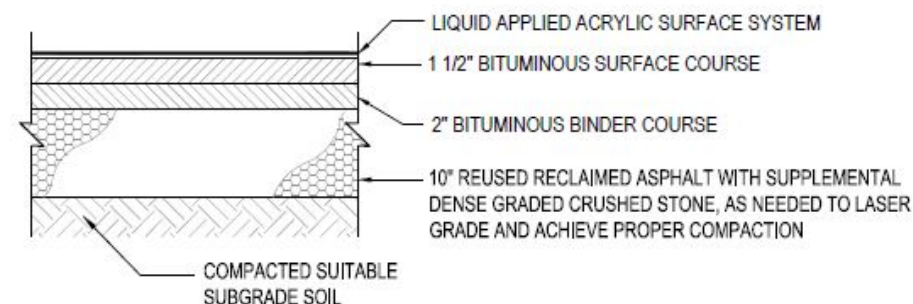


Approximate Lifecycle Cost: \$80,000 to \$130,000

Replacement Options and Costs

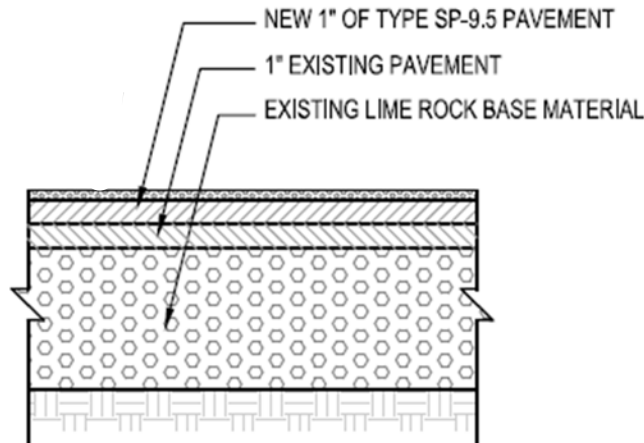
Bituminous Concrete System (Assume 6 Courts)

- Mill (1.5"), Overlay, Recoat, Restripe
 - \$215,000 to \$235,000
- Full Depth Mill (3.5"), Pave, Recoat, Restripe
 - \$225,000 to \$245,000
- Full Depth Reclaim Pulverization, Pave, Recoat, Restripe, New Fencing, New Equipment
 - \$450,000 to \$550,000



NOTE:

1. BINDER COURSE AND SURFACE COURSES SHALL BE INSTALLED PERPENDICULAR TO EACH OTHER.
2. TENNIS COURT BITUMINOUS CONCRETE SHALL CONTAIN 0% RECYCLED ASPHALT AND 0% RECYCLED SHINGLES.



Gale Example: Full Depth Pulverization (Reclamation)





Synthetic Turf Fields

Lifespan and Warranties

Anticipated Lifespan

- 10-12 years depending on use, materials and maintenance practices

Typical Warranty Coverage

- Turf supplier: 8 years from substantial completion
- Free from defects of material and workmanship
- Any defects to be remedied at no additional cost
- Turf fibers
- Infill
- Seams
- Lines
- Anchorage



Source: Google Earth



Source: Google Earth

Performance Testing of Synthetic Turf Surface



GMax



Head Injury Criterion (H.I.C.)



Infill Measurement



Temperature Mitigation



Ball Roll



Surface Regularity



Vertical Deformation (AAA)



Vertical Ball Rebound

3rd Party Testing



Performance Requirements Consist of Both Laboratory Testing & In-situ Testing (26 tests in all).



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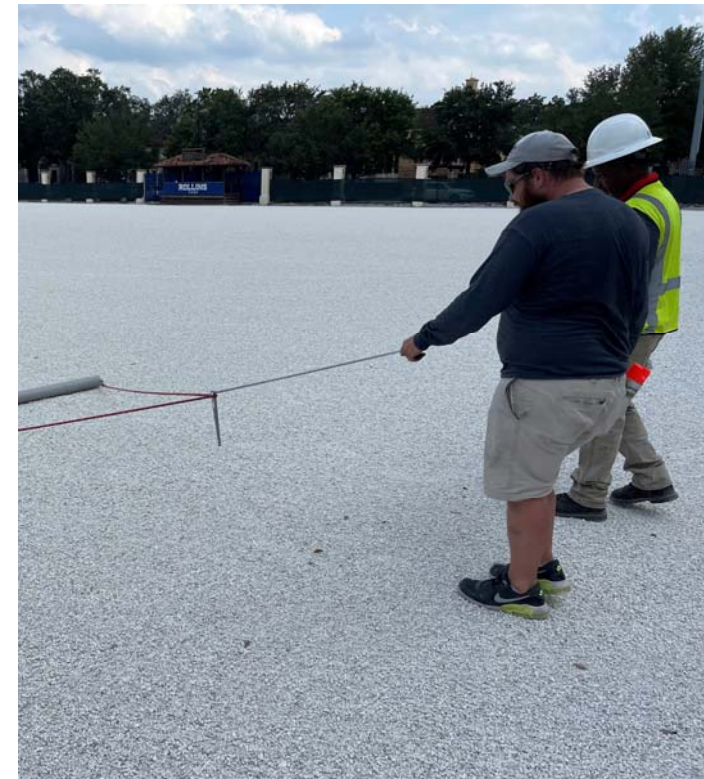
Performance Testing Prior to Turf Installation



Aggregate Testing (Sieve, L.A. Abrasion, Hardness)

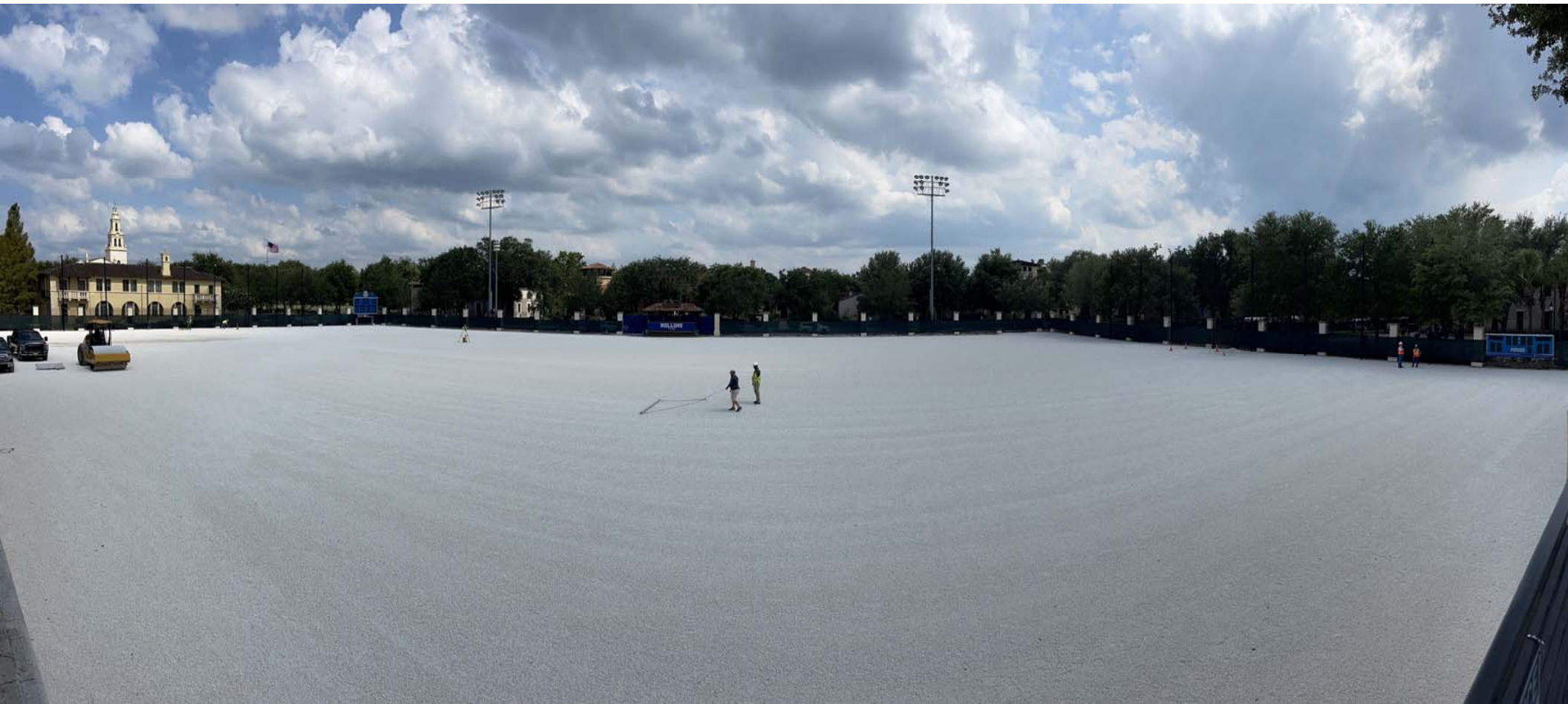


Infiltration Testing



Planarity / Surface Irregularity Testing

Performance Testing Prior to Turf Installation



Protecting Your Investment: Maintaining and Managing Athletic Facilities

Typical Maintenance Equipment



Turf Groomer (level infill and decompact)



Multi-Angle Drag Brushes and Adjustable Tines



Tow Behind Magnet (safety pins, bobby pins)



Sweeper (debris, sunflower shells, shoe spikes)



Dual Vibrating Motors (no infill displacement)

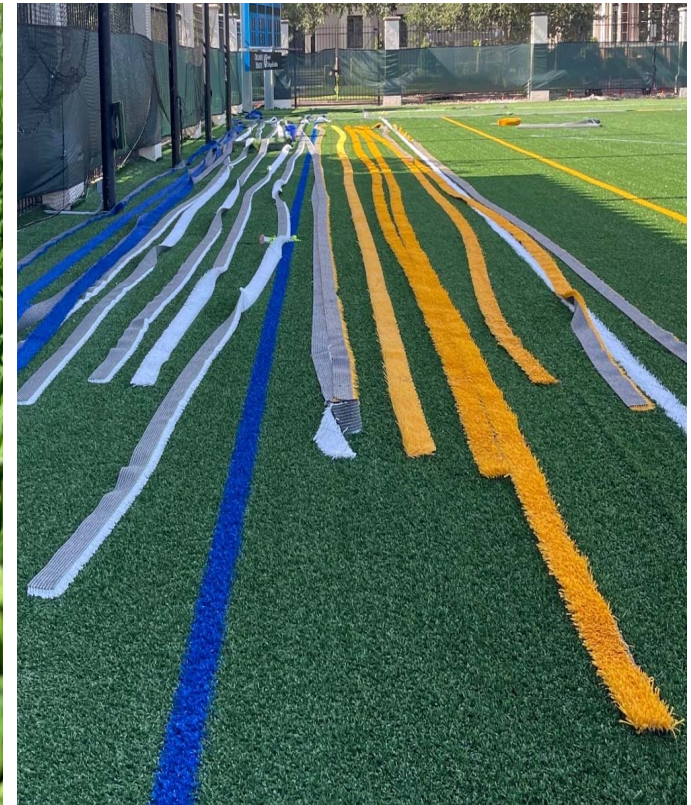
Include Attic Stock with Installation of Turf Field



Super Sacks of Infill Materials



Attic Stock of Turf Carpet



Attic Stock of Striping and Logo Colors

Signs of Aging

- Turf Fibers
 - Laid down
 - Discolored
 - Fiber Loss / Breakage
- Infill
 - Non-uniform distribution
 - Low infill depth
- Lifting/separating seams
- Harder, slicker surface
- Non-planarity of surface



Routine Maintenance and BMPs

Regular Maintenance:

- Cleaning
- Grooming
- Minor repairs
- Top dressing

Things to Consider:

- Regular testing for safety
- Manufacturer's use guidelines
- Budget for future replacement



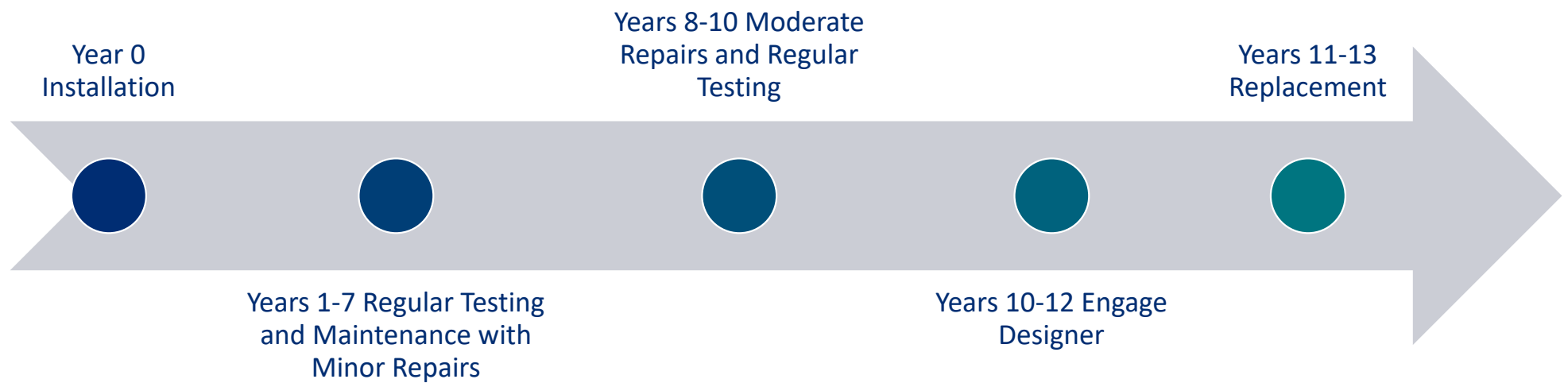
Replacement Options and Costs

Turf Replacement

- Removal of turf carpet and infill
- Laser grade existing base stone
- Replace in kind
- Anchor curb and base stone remain
 - \$650,000-\$850,000
 - Alternate infills
 - Shock pad



Typical Synthetic Turf Field Lifecycle



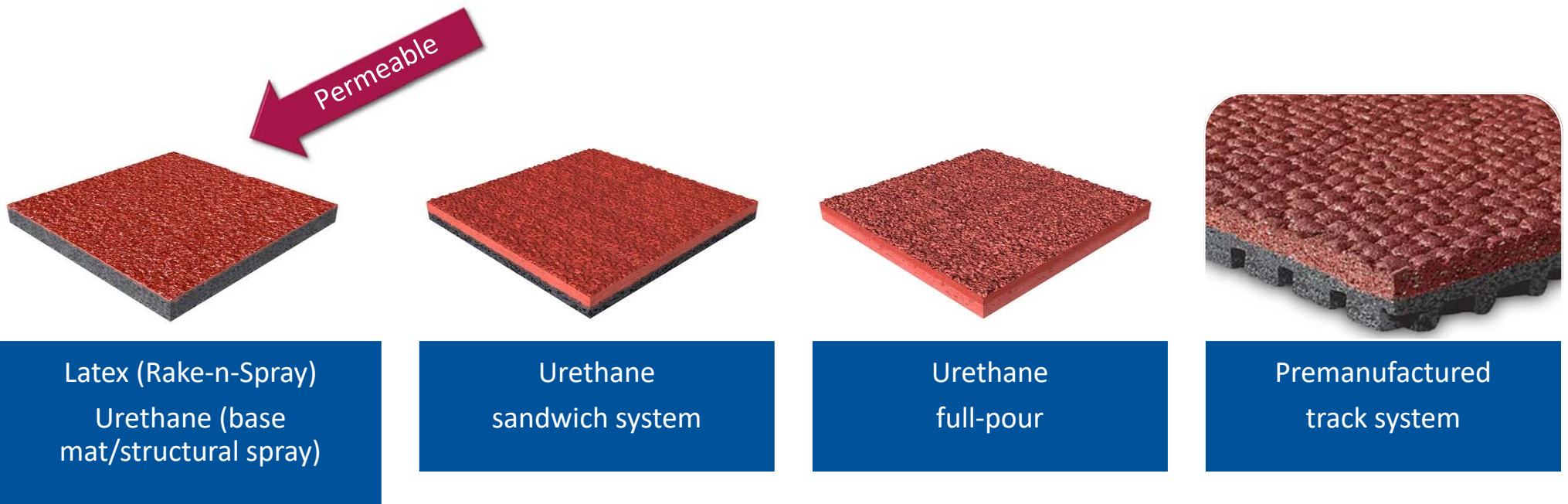


Synthetic Running Tracks



Types of Track Systems

Polyurethane & Latex Surface Systems



Today's Synthetic Track Systems can be tuned to meet specific Performance Requirements (13 mm, 1/2" minimum).

Performance Testing of Track Surface



No RAP in Mix / Surface Regularity Testing



Surface Depth Gauge Testing (13 mm min.)



Force Reduction Testing

Certifications:

Class 1 (WA), Class 2 (WA), **Class 3 (NCAA)**, Class 4 (NFHS)



TRACK & FIELD



**WORLD
ATHLETICS**



Protecting Your Investment: Maintaining and Managing Athletic Facilities

Lifespan and Warranties

Polyurethane & Latex Surface System

Typical Warranty Coverage

- Contractor Guarantee: Typical 2 Years From Substantial Completion
 - Defects in Materials or Workmanship

Manufacturer's Guarantee: Typical 5 Years from Substantial Comp.

- Defects in Materials (Not Asphalt Pavement)

Anticipated Lifespan

- Useful Life of 18 - 22 Years...**if Properly Maintained**

Common Signs of Aging

Moderate

- EPDM Granule Loss
- Weathering / Organics
- Color Fade

Severe

- Non-Planarity / Depressions
- Synthetic Surface Separation / Cracking
- Structural Asphalt Cracking (Reflecting to Surface)
- Tears / Section Loss

Common Signs of Aging



Surface separation



Improper Installation
Depth



Granule loss and color
fade



Full-Depth Cracking

Routine Maintenance and BMPs

Polyurethane & Latex Surface System

Routine Maintenance

- Keep Surface Clean (If Power-washing, Use Max. 1,200 PSI at 12" Distance).
- Limit Use of Running Spikes (Pyramid Spikes Required 6mm Max.)
- Rotate Lane Use During Practice Sessions
- Routine Inspections
- Routine Cleaning of Slot & Trench Drains
- Focus on Areas Subject to Significant Shade

Vehicle Traffic

- Vehicle Traffic Shall be Kept to a Minimum
- Crossing Protection Per Manufacturer's Recommendation
- Never Turn Vehicles on Surface
- Do Not Allow Vehicle Traffic During High Ambient Temperatures
- NOTE: Oil/Gas Spill Will Permanently Damage Surface System

Major Maintenance and BMPs

Latex Surface Systems

- Major Repairs & Maintenance
 - Recoat & Re-Stripe Every 6 – 8 Years
 - Cost: \$150,000 - \$180,000
(Standard 8-Lane Track & D-Areas)

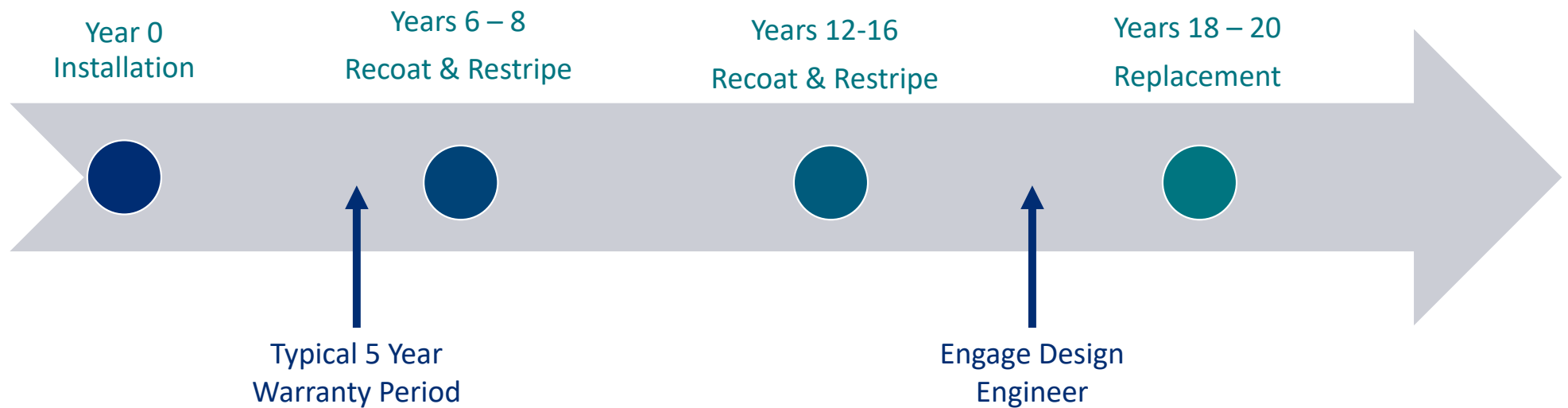
Polyurethane Surface Systems

- Major Repairs & Maintenance
 - Recoat & Re-Stripe Every 8 – 10 Years
 - Cost: \$170,000 - \$200,000
(Standard 8-Lane Track & D-Areas)
(3 Recoats Maximum)



Typical Track Facility Lifecycle (Latex)

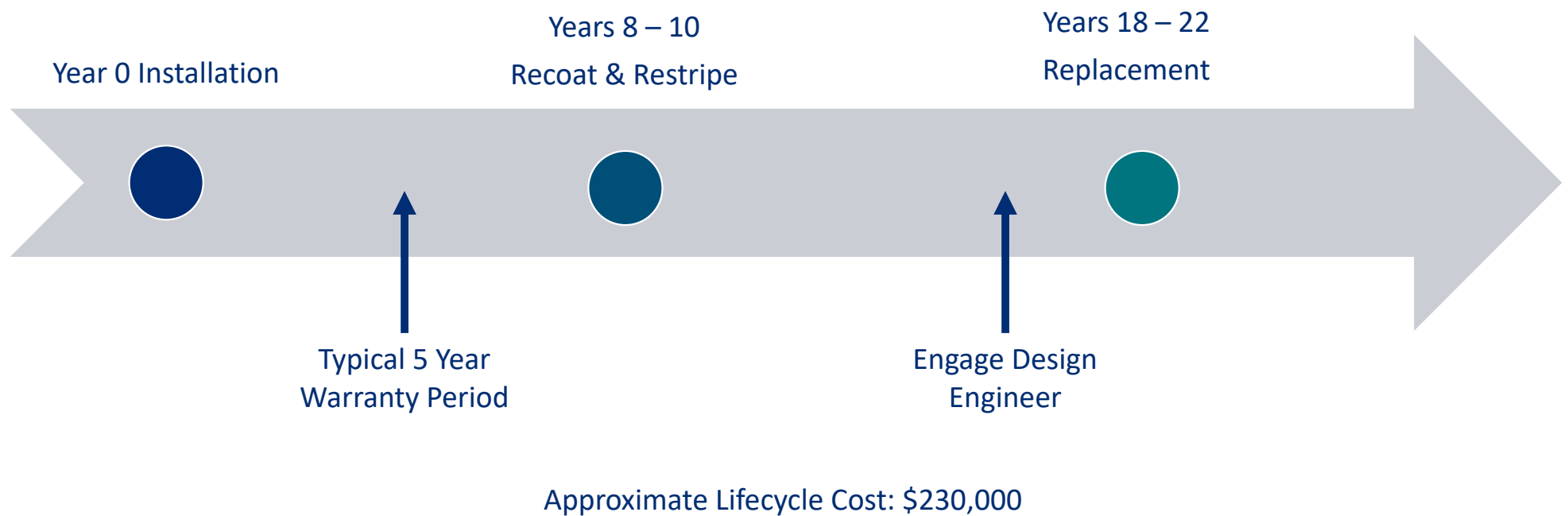
<- Routine Maintenance Throughout Lifecycle ->



Approximate Lifecycle Cost: \$340,000

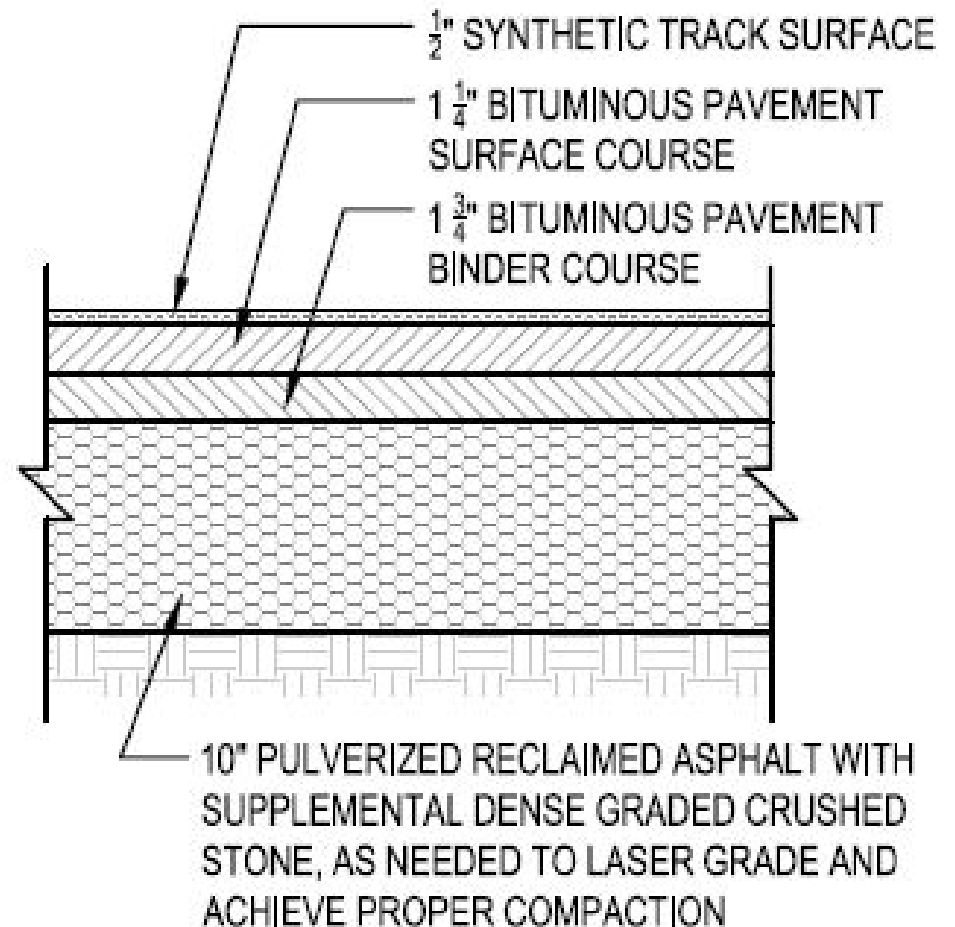
Typical Track Facility Lifecycle (Polyurethane)

<- Routine Maintenance Throughout Lifecycle ->



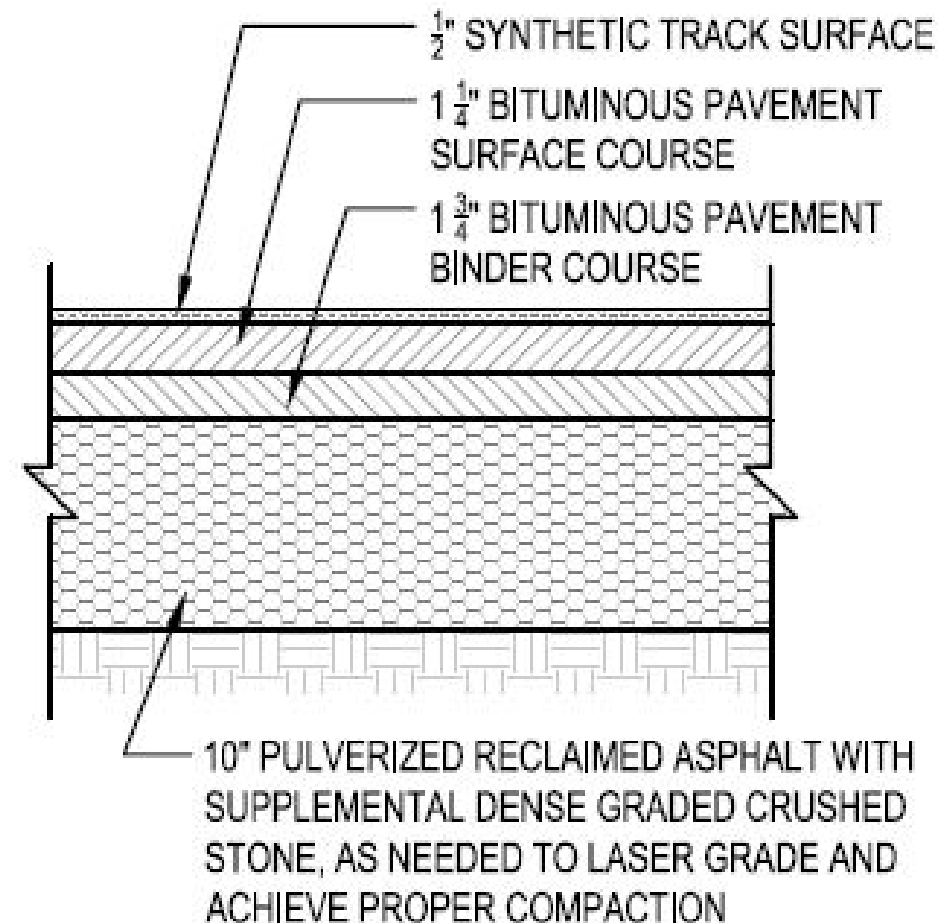
Replacement Options and Costs (Latex)

- Resurface (1/2") and Restripe
 - \$400,000 to \$500,000
- Mill (1.25" - 1.5"), Crack Repair, Overlay, Resurface and Restripe
 - \$675,000 to \$775,000
- Full Depth Mill (3"), Pave, Resurface, Restripe
 - \$700,000 to \$800,000
- Full Depth Pulverization (10" Stone), Reclaim, Pave, Resurface, Restripe
 - \$850,000 to \$950,000



Replacement Options and Costs (Polyurethane)

- Resurface (1/2") and Restripe
 - \$550,000 to \$650,000
- Mill (1.25" - 1.5"), Crack Repair, Overlay, Resurface and Restripe
 - \$800,000 to \$900,000
- Full Depth Mill (3"), Pave, Resurface, Restripe
 - \$850,000 to \$950,000
- Full Depth Pulverization (10" Stone), Reclaim, Pave, Resurface, Restripe
 - \$950,000 - \$1,050,000



Track Reconstruction Example





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Thank you!

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