

#### Unit Panel Specifications:

|           |  |
|-----------|--|
| Size:     | 32" x 32" x 1"   |
| Weight:   | 3.1 lb   |
| Strength: | 233 psi (unfilled)   |
| Resin:    | 100% Recycled (PIR)<br>Copolymer with Impact Modifier<br>"No Break" Polymer Material |
| Color:    | Black<br>(3% carbon black added for UV Protection)                                   |

#### AirDrain Cross Section

Scale 0.12:1

Typical

For AirDrain Grass Systems



Airfield Systems, LLC  
8028 N May Ave, Suite 201  
Oklahoma City, OK 73120  
(405) 359-3375

[www.airfieldsystems.com](http://www.airfieldsystems.com)

Drawing No. ADCS002.dwg

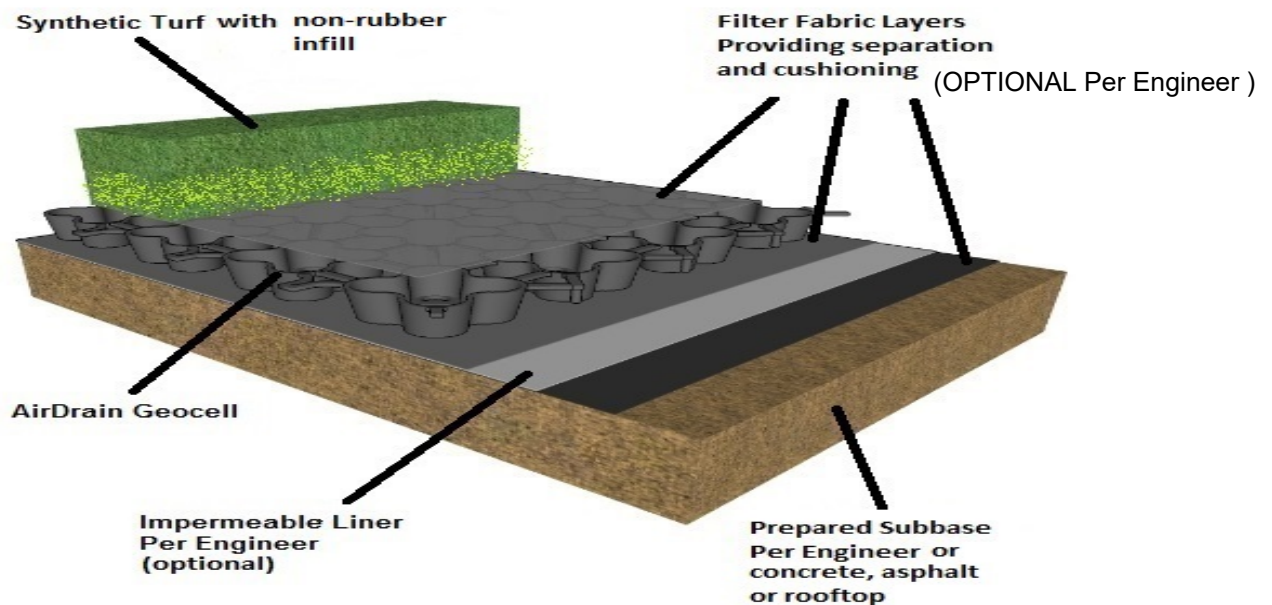
| General Information                                   |  |                           |             |
|---|--|---------------------------|-------------|
| General   |  |                           |             |
| Construction  | Injection Molded Copolymer                       |                           |             |
| Composition   | Copolymer Polypropylene Using an Impact Modifier |                           |             |
| Dimensions  | 31.784” x 31.880” x 1.000” (7.03 sq ft.)         |                           |             |
| Unit Weight   | 3.1 lbs.   |                           |             |
| Material  | Resin Pellets                                    |                           |             |
| Shipping  |  |                           |             |
| Parts Per Pallet                                      | 114  |                           |             |
| Pallet Dimensions                                     | 33” x 33” x 48”                                  |                           |             |
| Pallet Weight   | 390 lbs.   |                           |             |
| Area Coverage Per Pallet                              | 798 sq. ft.                                      |                           |             |
| Pallets Per Trailer                                   | 114 (3 wide x 2 tall x 19 deep)                  |                           |             |
| Area Covered Per Trailer                              | 90,972 sq. ft.                                   |                           |             |
| ASTM and ISO Properties <sup>1</sup>                  |  |                           |             |
| Physical  |  | Nominal Value             | Test Method |
| Specific Gravity                                      |  | 0.940                     | ASTM D792   |
| Melt Mass-Flow Rate (230°C/2.16 kg)                   |  | 20 g/10 min               | ASTM D1238  |
| Mechanical  |  | Nominal Value             | Test Method |
| Density   |  | 57.490 lb/ft <sup>3</sup> | ASTM D1505  |
| Tensile Strength (Yield, 73°F)                        |  | 2,145 psi                 | ASTM D638   |
| Tensile Elongation (Yield, 73°F)                      |  | 16%                       | ASTM D638   |
| Flexural Modulus (73°F)                               |  | 100,175 psi               | ASTM D790   |
| Compression Strength (73°F)                           |  | 233 psi unfilled          | ASTM D6254  |
| Impact  |  | Nominal Value             | Test Method |
| Notched Izod Impact (73°F, 0.125 in)                  |  |                           | ASTM D256   |
| Thermal   |  | Nominal Value             | Test Method |
| Deflection Temperature Under Load 264 psi, Unannealed |  | 160°F                     | ASTM D648   |
| Expansion/Contraction Index <sup>1</sup>              |  |                           |             |
| Temperature   | Humidity   | Length                    | Width       |
| 100°F   | 98%  | 31.881”                   | 31.817”     |
| -5°F  | 0%   | 31.765”                   | 31.713”     |
| Change  |  | .116”                     | .104”       |
| Joint Expansion/Contraction Capacity                  |  | .420”                     | .572”       |
| Safety Factor   |  | 362%                      | 550%        |
| Examples of Usage                                     |  |                           |             |
| Application   | Required Strength                                | Safety Factor             |             |
| Auto  | 40 psi   | x 168                     |             |
| Truck   | 110 psi  | x 61                      |             |

<sup>1</sup> Independent laboratory testing conducted by TRI/Environmental, Inc., TSI/Testing Services, Inc. and Wassenaar.

# AirDrain – What drains better than Air?

## For Synthetic Turf/Artificial Grass

The consistent Shock Attenuation properties of the **AirDrain** system are major contributors to the safety of players and the reduction of concussions. Unlike traditional shock pads or e-layers, **AirDrain** is 1" high, has 92% air void and 100% vertical drainage. **AirDrain's** performance cannot be matched by any other product in the industry.



### AirDrain reduces Shock Attenuation / GMAX by Approximately:

(per Architect/Engineer)

~

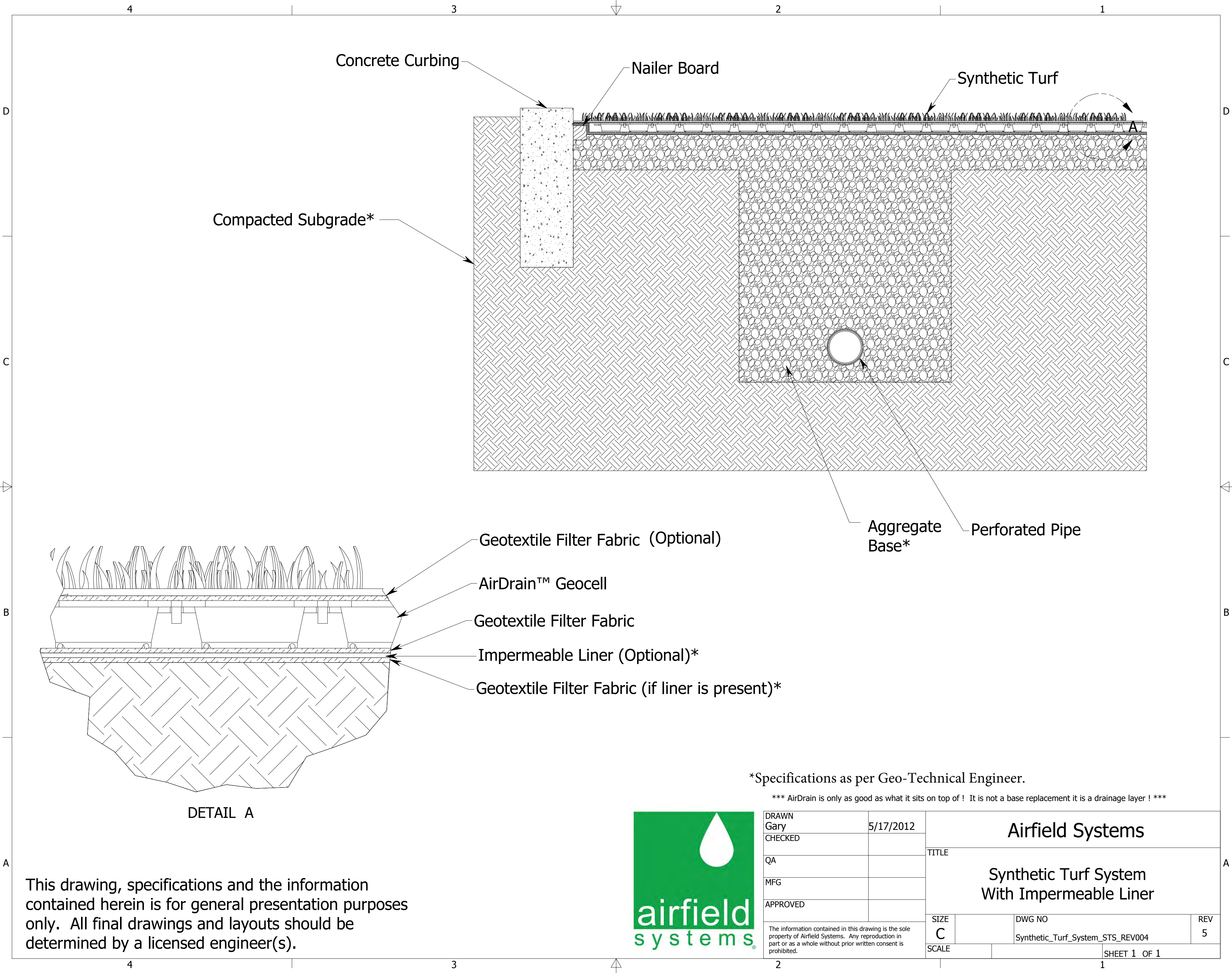
- 18.9% on a gravel subbase
- 14.7% on a concrete subbase

### Some of the Benefits of an AirField Synthetic Turf Drainage System include:

- AirDrain creates and helps maintain a constant and consistent Shock Attenuation for Synthetic Turf
- ASTM testing proves AirDrain's shock absorption properties reduces **Shock Attenuation**
- Only needs a **.25% slope** for effective drainage
- Patented expansion and contraction built into every part which keeps the grid from buckling
- AirDrain is only limited by the drainage capacities of the profile above and the exit drains below
- AirDrain can be reused multiple times when the synthetic turf must be replaced

\*This drawing, specifications and the information contained herein is for general presentation purposes only. All final drawings and layouts should be determined by a licensed engineer(s). HIC & Gmax testing are measured in a lab setting and are not site specific.

\*\*\* AirDrain is only as good as what it sits on top of ! It is not a base replacement it is a drainage layer ! \*\*\*



Concrete Curbing

Nailer Board

Synthetic Turf

Compacted Subgrade\*

Geotextile Filter Fabric (Optional)

AirDrain™ Geocell

Geotextile Filter Fabric

Impermeable Liner (Optional)\*

Geotextile Filter Fabric (if liner is present)\*

Aggregate Base\*

Perforated Pipe

DETAIL A

\*Specifications as per Geo-Technical Engineer.

\*\*\* AirDrain is only as good as what it sits on top of ! It is not a base replacement it is a drainage layer ! \*\*\*

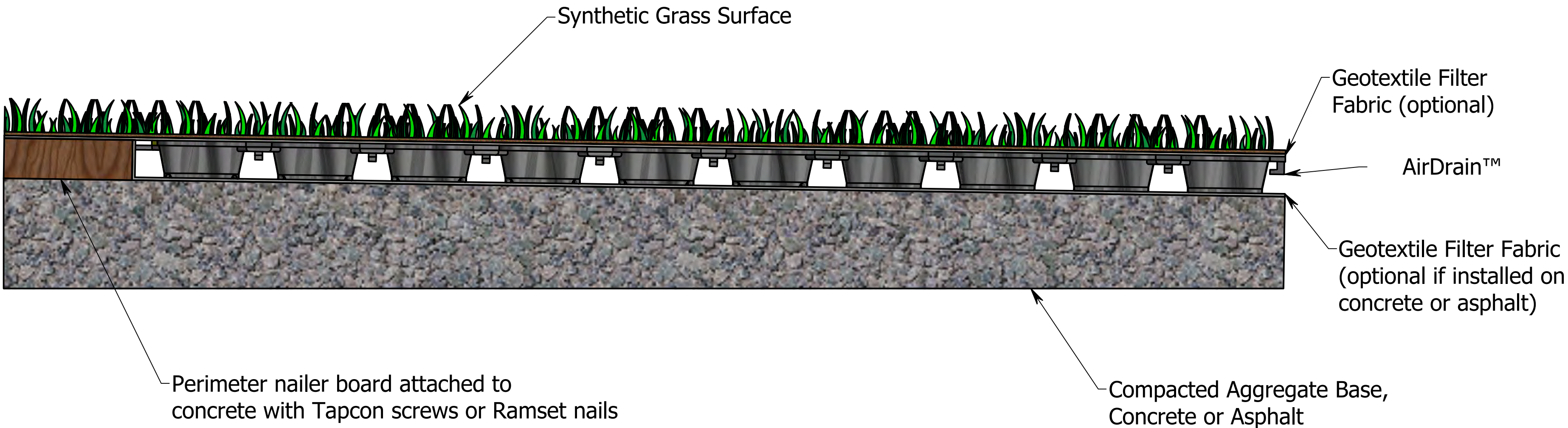
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|   |           |  |  |  |          |
|---|-----------|--|--|--|----------|
| DRAWN<br>Gary   | 5/17/2012 | Airfield Systems   |  |  |          |
| CHECKED   |           | TITLE<br><br>Synthetic Turf System<br>With Impermeable Liner |  |  |          |
| QA  |           |  |  |  |          |
| MFG   |           |  |  |  |          |
| APPROVED  |           |  |  |  |          |
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|   |           | SCALE  |  | SHEET 1 OF 1                               |          |



# Synthetic Turf Detail



### AirDrain™ Unit Panel Specifications:

- Size: 32" x 32" x 1"  
Weight: 3.1 lb  
Strength: 233 psi (unfilled)
- Resin: 100% Recycled (PIR)  
Copolymer with Impact Modifier  
"No Break" Polymer Material
- Color: Black  
(3% carbon black added for UV Protection)

Airfield Systems  
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[www.airfieldsystems.com](http://www.airfieldsystems.com)

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|   |           |  |                               |              |          |  |
|---|-----------|--|-------------------------------|--------------|----------|--|
| DRAWN<br>Gary   | 1/13/2013 | Airfield Systems   |                               |              |          |  |
| CHECKED   |           | TITLE<br><br>Synthetic Turf Edge Detail<br>on Compacted Aggregate Base |                               |              |          |  |
| QA  |           |  |                               |              |          |  |
| MFG   |           |  |                               |              |          |  |
| APPROVED  |           |  |                               |              |          |  |
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|   |           | SCALE  |                               | SHEET 1 OF 1 |          |  |

# AirDrain

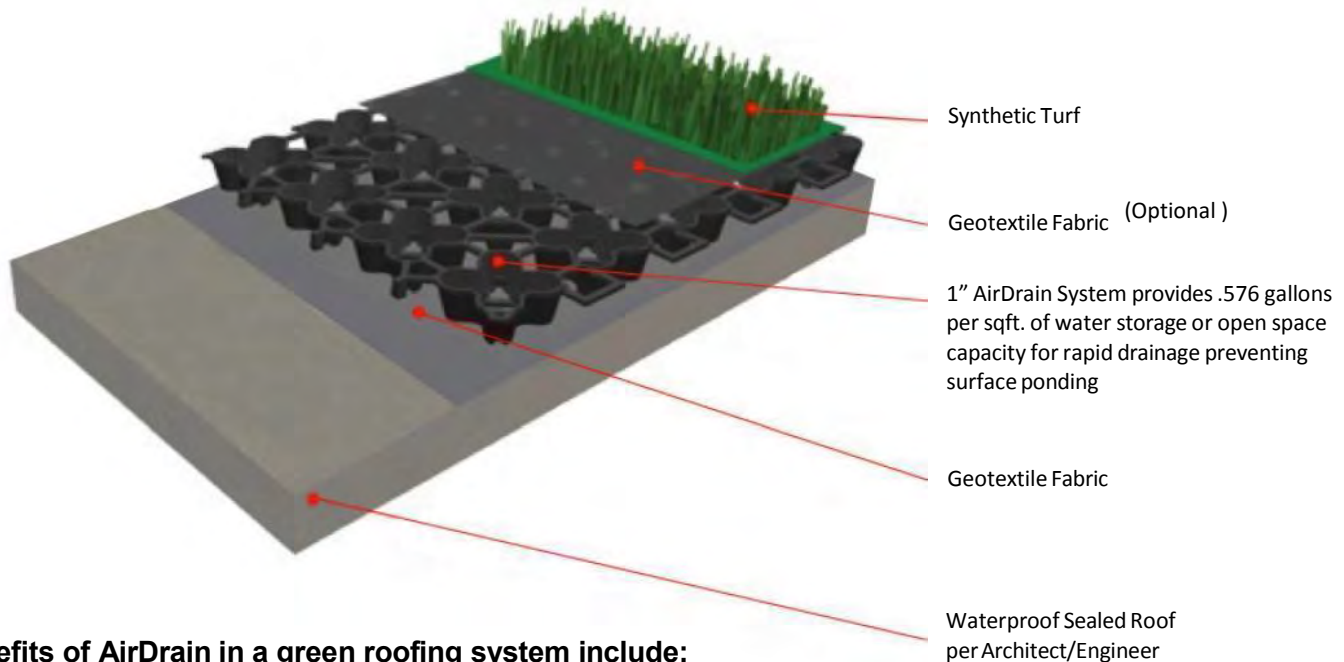
– What drains better than Air?

## Green Roofing - Synthetic Turf

With limited space on campus, both high schools and colleges are turning to rooftop sports surfaces to create multi-use green areas. Building a rooftop sports field with an AirField System provides drainage under 100% of the playing surface, prevents ponding, and moves water efficiently for reuse elsewhere on campus.

Over 3,000,000 square feet and counting of AirDrain rooftop drainage system has been installed.

LACC “[LA Community College](#)” 95,000 sqft., MSOE “[Milwaukee School of Engineering](#)” 100,000 sqft., UCSD “[University of California in San Diego](#)” 80,000 sqft., WPI “[Worcester Polytechnics Institute](#)” 174,000 sqft. and [Binghamton High School](#) 47,000 sqft.



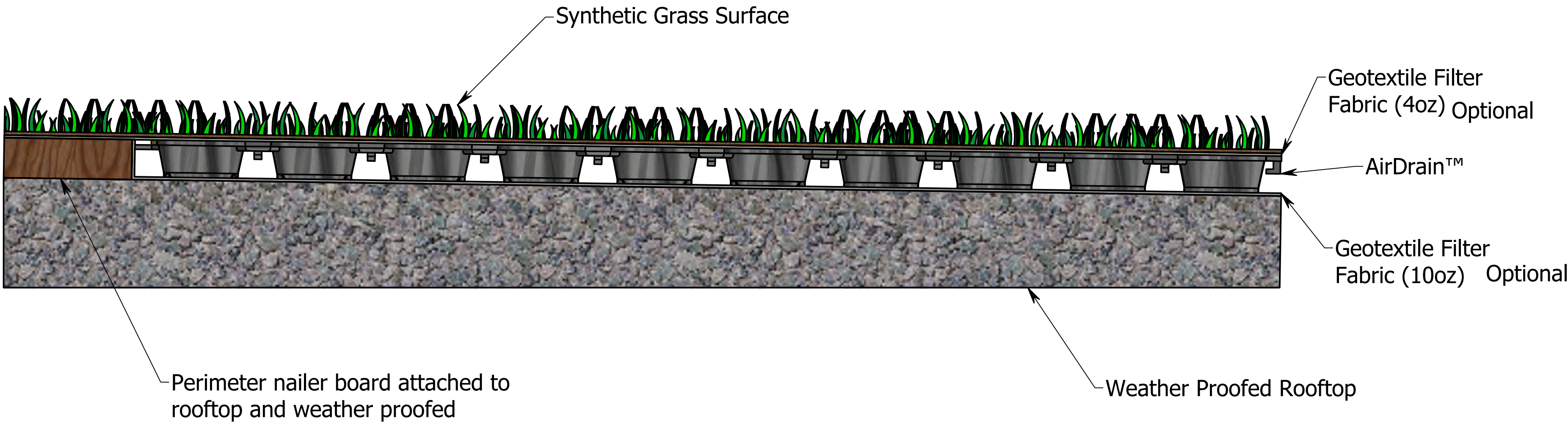
### Benefits of AirDrain in a green roofing system include:

- AirDrain creates and helps maintain a more consistent Gmax for Synthetic Turf
- ASTM testing proves AirDrain's shock absorption properties reduces Gmax
- AirDrain can be reused when the Synthetic Turf must be replaced
- Can help qualify for **LEED™** and other green building credits
- Pallets can be taken up to the roof in an elevator (32"x32"x48" and 392lbs.)
- Water harvesting reclamation and reuse is easy
- AirDrain creates a 1" air barrier on the rooftop which increases the insulating properties.
- AirDrain is a 100% recycled copolymer which has the impact modifier added to it for qualification as a "No Break" plastic, making it able to withstand extreme heat and cold and still maintain performance

**Now Available "AirDrain FR" E-108 Class A Rated Parts  
Zero Spread of Flame**



# Synthetic Turf Rooftop



**Now Available "AirDrain FR" E-108 Class A Rated  
ZERO SPREAD of FLAME**

**AirDrain™ Unit Panel Specifications:**

- Size: 32" x 32" x 1"
- Weight: 3.1 lb
- Strength: 233 psi (unfilled)  
6747 psi (filled)
- Resin: 100% Recycled (PIR)  
Copolymer with Impact Modifier  
"No Break" Polymer Material
- Color: Black  
(3% carbon black added for UV Protection)

Airfield Systems  
8028 N. May Ave., Suite 201  
Oklahoma City, OK 73120  
(405) 359-3775  
[www.airfieldsystems.com](http://www.airfieldsystems.com)

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|   |           |  |                               |              |          |
|---|-----------|--|-------------------------------|--------------|----------|
| DRAWN<br>Gary   | 1/13/2013 | AirField Systems                                       |                               |              |          |
| CHECKED   |           |  |                               |              |          |
| QA  |           | TITLE<br><br>Synthetic turf Edge Detail<br>on Roof Top |                               |              |          |
| MFG   |           |  |                               |              |          |
| APPROVED  |           |  |                               |              |          |
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|   |           | SCALE  |                               | SHEET 1 OF 1 |          |

# AirDrain

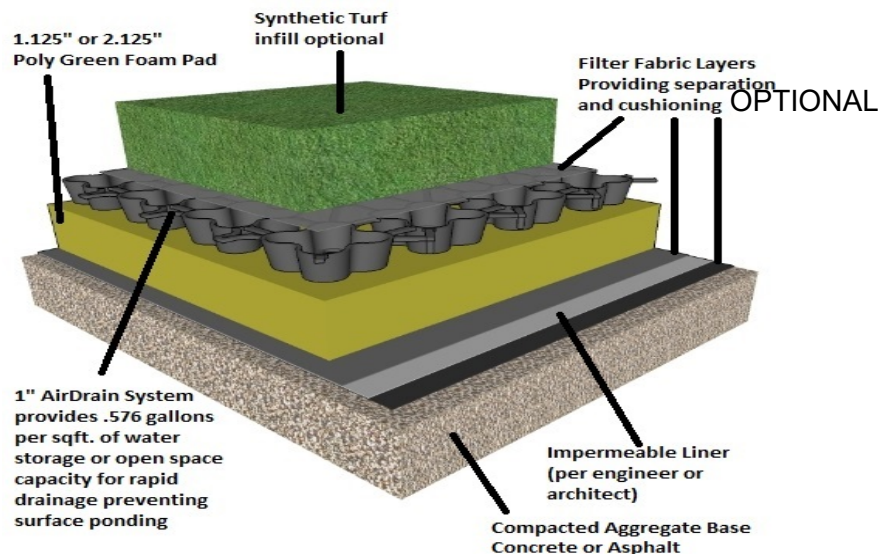
– What drains better than Air?

## Playground Drainage for Synthetic Turf/Artificial Grass

Not all drainage is created equal! AirDrain offers 100% vertical drainage and has 92% air void. This combination effectively collects and redirects water easily. Additionally, AirDrain raises the entire profile a full 1", letting gravity drain the entire playground quickly and efficiently. The combined effect of AirDrain is a more stable surface area, reduced expenses for repairs and more play time.

A drainage system should allow for water to quickly drain away from the surface and be directed to exit drains, thus allowing a shorter turnaround time for the continuation of play. AirDrain provides drainage which is unmatched in the industry – up to 40gpm/sf – allowing the surface to be free of water. AirDrain is only limited by the drainage capacity of the profile above and the capacity of the exit drains.

For playgrounds constructed with AirDrain the grid is installed on top of a 1.125" or 2.125" foam pad which is placed directly onto the properly prepared subbase of concrete, asphalt or compacted aggregate. This creates a 1" air void and allows for maximum drainage.



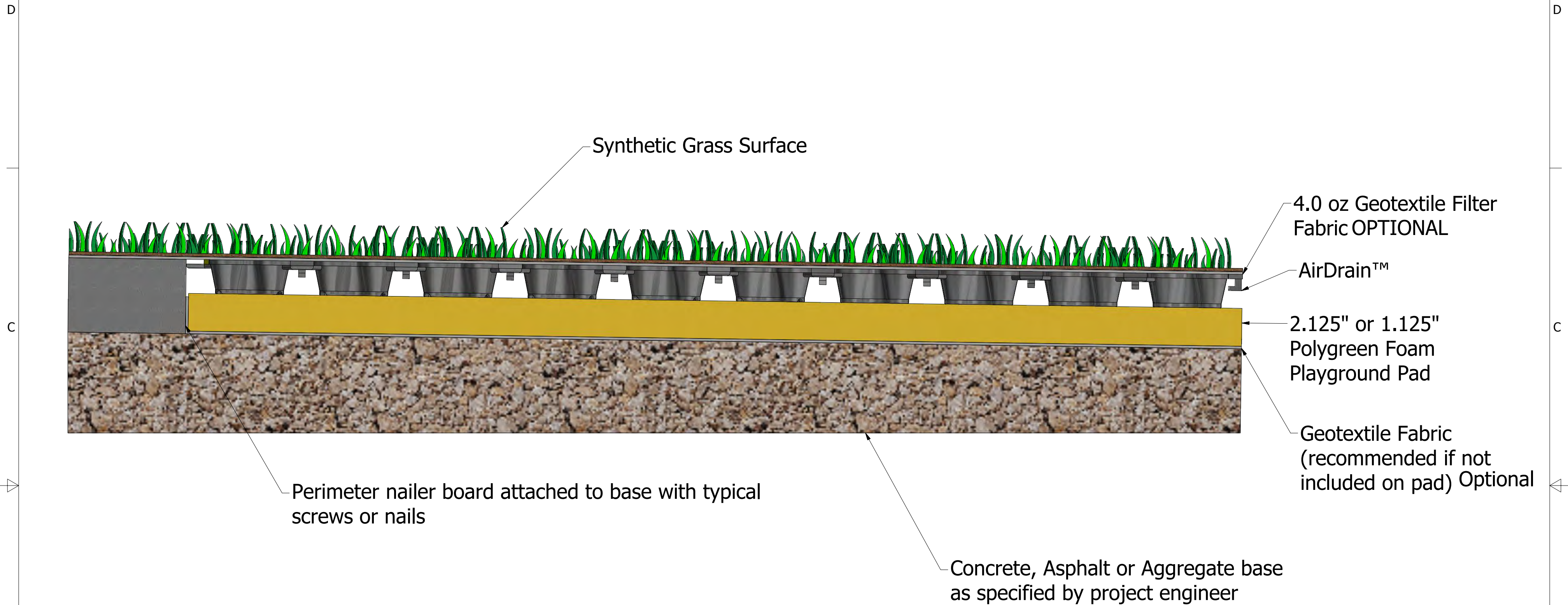
### Benefits of an AirDrain playground drainage system include:

- AirDrain raises the entire profile 1" off the subbase and brings gravity into play
- AirDrain's 92% air-void space allows for fast and easy water removal
- Consistent fall height and shock attenuation for the life of the project provides a safe play area
- AirDrain is a 100% recycled copolymer which has the impact modifier added to it for qualification as a "No Break" plastic, making it able to withstand extreme heat and cold and still maintain performance
- AirDrain's quick snap connectors allows for effortless installation
- Minimal site disturbance, excavation and disposal
- Compact shipping reduces transportation costs

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# AirDrain Application with Pad Below AirDrain



**AirDrain™ Unit Panel Specifications:**

- Size: 32" x 32" x 1"
- Weight: 3.1 lb
- Volume: 8% material, 92% air void
- Strength: 233 psi (unfilled)
- Resin: 100% Recycled (PIR)  
Copolymer with Impact Modifier  
"No Break" Polymer Material
- Color: Black (3% carbon black added for UV Protection)



|                  |           |  |                                   |                |
|------------------|-----------|--|-----------------------------------|----------------|
| DRAWN<br>G. Abdo | 2/22/2015 | AirField Systems   |                                   |                |
| CHECKED          |           | TITLE<br>AirDrain Application with Pad<br>Below AirDrain |                                   |                |
| QA               |           |  |                                   |                |
| MFG              |           |  |                                   |                |
| APPROVED         |           | SIZE<br>C  | DWG NO<br>Playground_AFS_SP_Under | REV<br>REV_001 |
|                  |           | SCALE  | SHEET 1 OF 1                      |                |

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# AirDrain

–What drains better than Air?

**For K9 Areas: Pet Playgrounds, Dog Runs, Kennels and More.....**

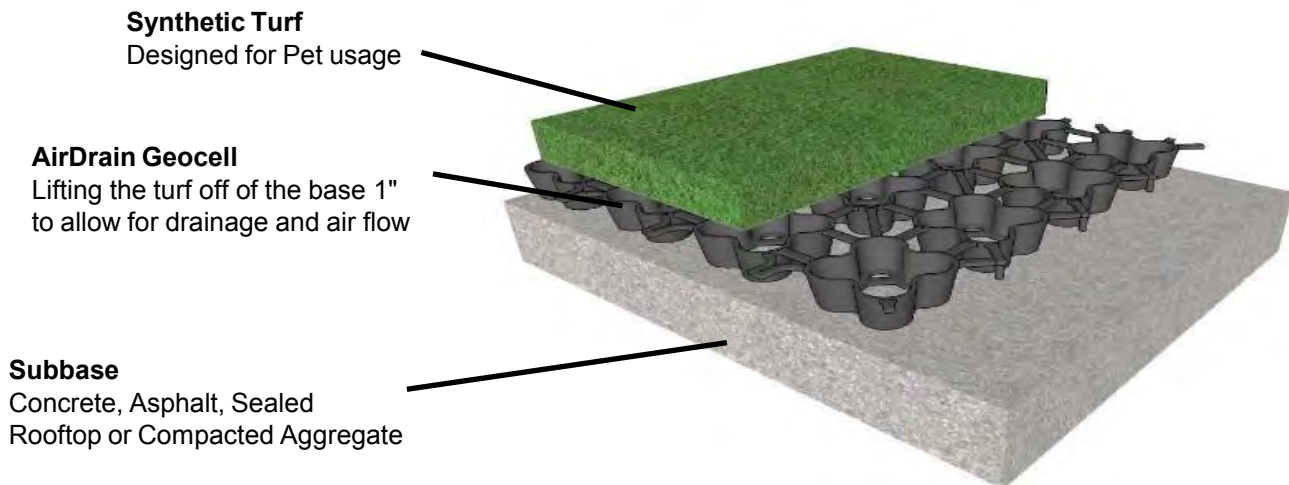
AirDrain is a 17+ year proven success! With over 800+ K9 areas installed, [AirDrain K9 Drainage by AirField Systems](#).

AirDrain is made with the highest quality 100% post manufactured industrial recycled content. Due to 92% air void underneath the turf, unwanted waste can be washed away quickly by using an easily installed flushing system. This flushing system attaches to any water source and uses inexpensive PVC piping around the perimeter of the grid. Low cost, easy to install, do it yourself drainage.

**Dog Run Drainage Performance is divided into 3 parts:**

1. How fast can the urine drain through the synthetic turf? This can be very problematic with many drainage products. The urine must pass through a small hole in the turf backing that is often sitting on other products flat surface. This forces the urine to squeeze horizontally through the small gap between the turf backing and the drainage surface. The urine won't drain until it finds a place to fall vertically.
2. The vertical drainage how fast can the urine pass all the way into the underlayment
3. Horizontal Drainage how fast can the urine be moved to the exit drain (AirDrain is 92% air)

**The AirDrain Drainage System addresses all 3 of the above issues better than any other product on the market. Period!!!**



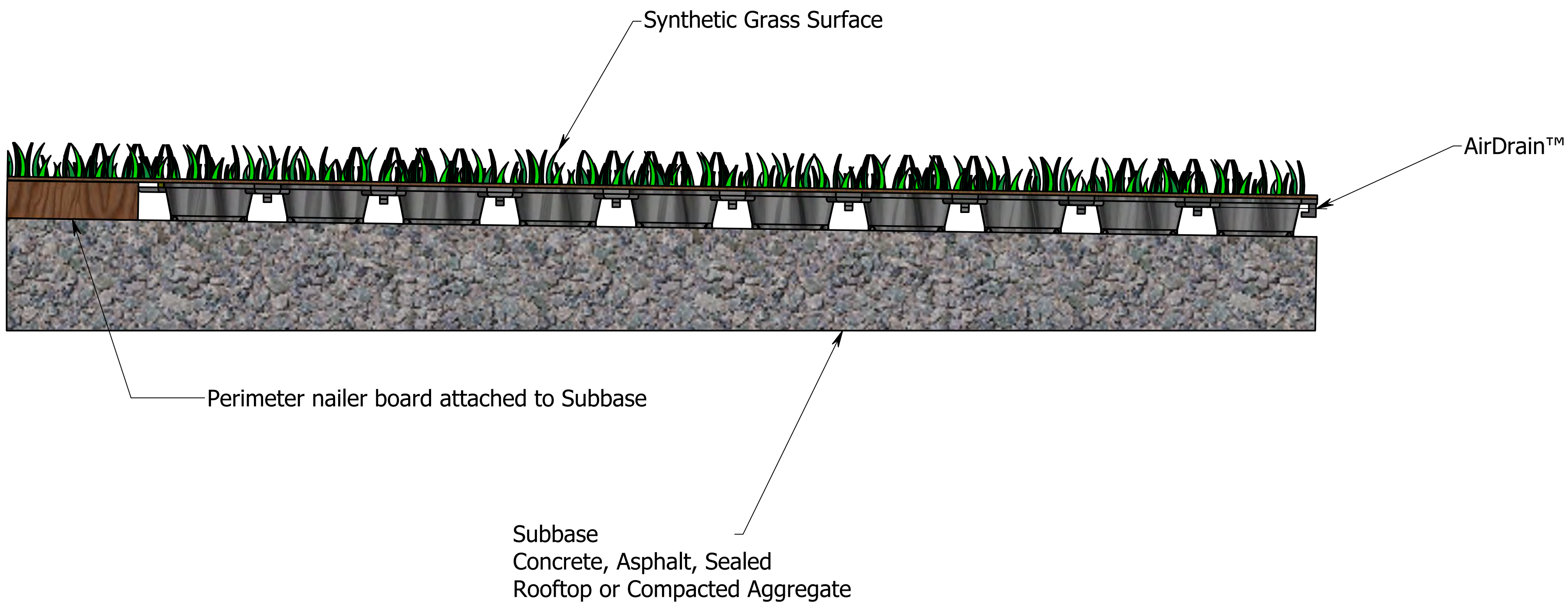
**Benefits of an AirDrain K9 Drainage System area include:**

- 92% air-void for fast and easy waste removal
- Ability to flush the area daily
- AirDrain's quick snap connectors allows for effortless installation
- Greatly reducing transportation costs going straight to the bottom line! No other product comes close to shipping as efficiently!

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# Pet Areas and Dog Runs



- AirDrain™ Unit Panel Specifications:**
- Size: 32" x 32" x 1"
  - Weight: 3.1 lb
  - Strength: 233 psi (unfilled)
  - Resin: 100% Recycled (PIR)  
Copolymer with Impact Modifier  
"No Break" Polymer Material
  - Color: Black  
(3% carbon black added for UV Protection)

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|   |          |                          |                                |     |
|---|----------|--------------------------|--------------------------------|-----|
| DRAWN<br>Gary   | 8/6/2012 | Airfield Systems         |                                |     |
| CHECKED   |          |                          |                                |     |
| QA  |          | Edge Detail on Pet Areas |                                |     |
| MFG   |          |                          |                                |     |
| APPROVED  |          | SIZE<br>C                | DWG NO<br>Concrete_Airpave_002 | REV |
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|   |          |                          |                                |     |



## [AirDrain Drainage ASTM D4716 Synthetic Grass and Natural Grass Testing](#)

### **What drains better than air!**

If your field floats, has ponding or infill migration (which is an extreme player safety and owner liability issue) and you can't figure out why, maybe because they said it would drain XX amount per hour when in reality, it doesn't and never will.

Those issues don't get better they get worse! Countless hours in maintenance and grooming, adding materials etc. etc. what's the cost of that every month?

### **In a Cost Value Performance scenario, no product comes close to AirDrain!**

Over the years, many architects and engineers have asked us just how fast will the AirDrain grid drain. Our reply has always been that the AirDrain is only limited by what is above it and the exit drains due to the fact that the area of an AirDrain part is 1" inch high and has a 92% air void.

Recently, our AirDrain grid was tested using the [ASTM D 4716 Hydraulic Transmissivity Standard Test Method](#). The testing was done using plates on top and bottom of the AirDrain part, setting them to the required slope and adding water from one end down the slope. AirDrain was draining so fast they had to modify their testing equipment to accommodate the volume of water AirDrain could move.

As it turns out there is practically no resistance to drainage using the AirDrain grid? The most important factor to consider is the percentage of slope that the AirDrain is sitting on.

To put this in perspective of rainfall, AirDrain can handle anything that Mother Nature throws at it. On a nearly completely flat surface (1/2% of 1% slope) AirDrain will drain 2.85 inches of rainfall in one minute.

For example, it could rain over 171 inches in an hour and AirDrain could drain it. AirDrain can hold .576 gallons of water per sqft. if needed until it can evacuate to the perimeter exit drains.

AirDrain has been used in specs and projects where the city or county has limited the water that can be introduced into the sewer system or has limited the size or volume of the exit drains on a roof top. AirDrain's capability to hold water .576 gallons of water per sqft. in the grid until the exit drains can evacuate it is another plus for the AirDrain System.

No other product on the market comes close to AirDrain's ability to drain a project, it's not even close.

So when you see the claims of manufacturers rainfall per hour drainage, ask them if they have the test that really shows a products drainage capability.

**Now you know!  
Nothing Drains Better Than Air!**

# AirDrain

## **White Paper on the Gaps in the AirDrain Cups**

Whenever you lay artificial turf on top of AirDrain it's the same principle as installing carpet. It is stretched and attached to the perimeter boarder, similar to carpet installation. The turf, typically has a 50-80 ounce polyurethane backer.

You will be adding between 1.5 - 3 lbs. of infill for ballast. Given that scenario, you'll never feel what's below the turf because the depth of the infill will not transfer down to the grid below the turf.

Since 2002, Airfield Systems has thousands of installs, to this date Airfield Systems has not received one call with a "gap" issue.

AirDrain's 8% solid is unmatched don't let'em kid ya! AirDrain is the only way to go Period ! Don't forget about a 15-20 % reduction in GMAX. I'll put AirDrain up against any 1" pad in the industry any day of the week in 3rd party testing bring it! AirDrain brings a massive 233 psi

Don't get sold a bill of goods that doesn't come close to performance of AirDrain made in the USA!

If you have any questions or concerns whatsoever do not hesitate to call me at 405-361-2287

**Michael T. Bean**

Director of Sales

**Airfield Systems, LLC**

Cell: (405) 361-2887

[airfieldsystems.com](http://airfieldsystems.com)



## CLIENT:

|          |                            |
|----------|----------------------------|
| Company: | Airfield Systems LLC       |
| Address: | 808 N May Street Suite 201 |
|          | Oklahoma City, Ok 73120    |
|          |                            |
|          |                            |
|          |                            |

## TEST MATERIAL:

|                         |   |
|-------------------------|---|
| Date Material Received: | February 10, 2023                       |
| Material Type:          | Synthetic Turf w/ Infill Over Air Drain |
| Material Condition:     | Excellent, New                          |
| Turf Description:       | X47                                     |
| Infill System:          | 2.0 lbs/ft <sup>2</sup> Envirofill      |
| Pad System:             | Air Drain                               |
| Sub-Base:               | Concrete                                |

## TESTING METHODS REQUESTED:

|   |            |              |  |
|---|------------|--------------|--|
| Testing Services Inc. was instructed by the client to test for the following... |            |              |  |
| Standard:   | ASTM F355a | Test Method: | Standard Test Method for Impact Attenuation of Playing Surface Systems and Materials |

## SAMPLING PLAN:

|   |          |
|---|----------|
| Sampling Date:  | 12/20/22 |
| <ul style="list-style-type: none"> <li>Specimen sampling is performed in the sampling department at TSI.</li> <li>The sampling size of specimens is determined by the test method requirements.</li> <li>In the event a specific sampling size is not called for, a determination will be made based on previous testing experience, and approved for use by an authorized manager.</li> <li>All samples are subjected to the outside environmental conditions of temperature and relative humidity.</li> <li>Sample requiring pre-determined exposure to specified environmental conditions based on a specific test method, take place in the departments in which they are tested</li> </ul> |          |

## DEVIATION FROM TEST METHOD:

|  |
|--|
| State reason for any Deviation from, Additions to, or Exclusions From Test Method. |
| None   |

## TEST SCOPE:

This test method determines cushioning properties of the playing surface system and materials under specific conditions. The playing surface tested is impacted at a specified velocity with a missile of given mass and geometry to determine the maximum value of g's encountered during impact. The missile, 9.1 kg (20 lbs), was released as to impact the center of the test assembly at a velocity of 3.43 meters/second at a drop height of 24". Three missile releases were made, allowing 60 ± 30 seconds between drops. The first drop was for assembly conditioning and the second and third drop used for averaging.

## TEST EQUIPMENT:

|                       |  |  |
|-----------------------|--|--|
| Operating System:     | TRIAX Touch A Missile System<br>TS GMAX 2 UNIT   | Calibration: Accelerometer #: 1904<br>Calibration Date: 9/24/20 valid thru 9/24/22 |
| Missile Type, Weight: | (A) Cylindrical  |  |
| Missile Weight:       | 20 ± 0.11 lbs  |  |
| Missile Diameter:     | Circular Face 20 ± 1.0 in <sup>2</sup>   |  |
| Drop Height:          | 24" (2 Feet) Guidance Thru Acrylic Tube, Bottom of Missile Face to Top of Turf Surface |  |

## TEST DATA:

|                       |                   |
|-----------------------|-------------------|
| Test Conditions       | 75°F 41% RH       |
| Test Date/Time        | 2/21/23 @ 3:21 PM |
| Overall Infill Depth: | Not Applicable    |

| DROP 1<br>(GMAX) | DROP 2<br>(GMAX) | DROP 3<br>(GMAX) | AVERAGE GMAX |
|------------------|------------------|------------------|--------------|
| 110              | 124              | 136              | 130          |

## Uncertainty:

We undertake all assignments for our clients on a best effort basis.  
Our findings and judgments are based on the information to us using the latest test methods available.  
TSI can only ensure the test results for the specific items tested.  
Unless otherwise noted in the deviations sections of this report, all tests are performed in compliance with stated test method.  
Test Report Approval:

Erle Miles, III, Lab Director Testing Services Inc.

TSI Accreditation: Our laboratory is accredited by the US Dept. of Commerce, National Institute of Standards and Technology: ISO/IEC 17025:2005. Our code # is: NVLAP 100108-0.  
TSI is a certified independent testing laboratory by the Synthetic Turf Council

