

**Synthetic Turf Athletic Fields built using AirField Systems AirDrain consistently outperform fields built over stone, concrete or asphalt, by reducing the Gmax and shock attenuation an average of 18.9% and 14.7%, and helps keep it there, for the life of the field.**

Multiple tests conducted by TSI Testing Services (an approved independent Test Laboratory by the Synthetic Turf Council) using ASTM F355-10a: Standard Test Methods for Shock-Absorbing Properties of Playing Surface Systems and Materials.

**Gravel Subbase:** with the use of the filter fabrics and AirDrain with infilled synthetic turf reduced Gmax attenuation by 18.9% versus Gmax attenuation which employed just the turf + infill system using the same sub base.

**Concrete Subbase:** with the use of the filter fabrics and AirDrain with infilled synthetic turf reduced Gmax attenuation by 14.7 % versus Gmax attenuation which employed just the turf + infill system using the same sub base.

## **Player Safety**

The consistent Gmax and shock attenuation properties of AirDrain are a major contributor to the reduction of concussions and the safety of your players. Some factors that might influence a change in GMAX would be an inconsistency of the infill or wear of the synthetic turf fibers. Unlike traditional shock pads or e-layers the AirDrain is 1" high, has a 92% air void and a vertical and lateral drainage rate which cannot be matched by any other product in the industry.

See testing results conducted by TSI Testing Services below.



**TESTING SERVICES, INC.**  
 817 SHOWALTER AVE. • P.O. BOX 2041  
 DALTON, GEORGIA 30722-2041  
 PHONE: (706) 226-1400 • FAX: (706) 226-6118

## Test Report

<b>CLIENT:</b>	AirField Systems	<b>REPORT NUMBER:</b>	<b>56765</b>
	8028 N. May Avenue Suite 201	<b>LAB TEST NUMBER:</b>	2497-5010
	Oklahoma City, OK 73120	<b>DATE:</b>	November 30, 2012
		<b>PAGE:</b>	1 of 2

**Synthetic Turf Description:** 46 oz/yd<sup>2</sup> Monofilament/Slit Film Fiber  
 2.25" Pile Height Monofilament / 2.125" Pile Height Slit Film  
 9.25 oz/yd<sup>2</sup> 3 Layer Primary Backing  
 25.1 oz/yd<sup>2</sup> Secondary Urethane Backing

**Infill System Installed:** 3.0 lbs/ft<sup>2</sup> SBR Rubber Mixed with 1.25 lbs/ft<sup>2</sup> Silica Sand

**Underlayment #1:** 10 oz Filter Fabric (Between Sub Base and Drain System)

**Drain System:** Air Drain (Cups Down Against 10 oz Filter Fabric)

**Underlayment #2:** 4 oz Filter Fabric (On top of Flat Surface Air Drain, Under Turf)

**Sub Base:** 2" Layer # 7 & # 81 Rock  
 1" Compacted Fines Layer

**Discussion:** Testing Services Inc was instructed to carry out testing on the sample supplied according to the following testing:

- Comparative Gmax or cushioning properties between the turf and sub base system vs. the turf + Air Drain + Filter Fabrics and sub base.

**Material Received:** 27 November 2012

**Note:** The above turf was selected from stock and its construction and infill properties are indicative a "typical" playing field for sports activity.

Approved By:

Erle Miles, Jr V.P., Testing Services Inc

**TSi Accreditation:** Our laboratory is accredited with US Dept of Commerce, National Institute of Standards and Technology: ISO/IEC 17025:2005. Our code # is NVLAP 100108-0. TSi is also recognized as an approved Independent Test Laboratory by the Synthetic Turf Council. However, it should be noted that some or all of the tests performed are not under our scope of accreditation due to the work not fully conforming to the standard, or it being outside the scope of our accreditation, or subcontracted.

**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.

**Testing Atmosphere:** Unless otherwise noted, all testing was conducted under standard lab conditions of 20± 2°C and 65 ± 4% r.h.

**TESTING SERVICES, INC.**817 SHOWALTER AVE. • P.O. BOX 2041  
DALTON, GEORGIA 30722-2041  
PHONE: (706) 226-1400 • FAX: (706) 226-6118Report Date: 30 November 2012  
Report #: 56765  
Page #: 2 of 2Client: AirField SystemsDate of Test: 29 November 2012Test Conditions: 61.5°F 36% RH.Procedure: **ASTM F355-10a: Standard Test Methods for Shock-Absorbing Properties of Playing Surface Systems and Materials ( Procedure A)**

Data obtained from this test method are indicative of cushioning properties of the playing surface system and materials under the specific conditions selected. The playing system is impacted at a specified velocity with a missile of given mass and geometry to determine the maximum value of *G encountered during impact*.

The test set-up was positioned over the sub base with the clearview bumper II (gmax test equipment) placed level over the entire system. The missile was released, so as to impact the center of the assembly at a velocity of 3.43 m/s at a drop height of 24". Three drops were made at 3 minute intervals. The procedure was repeated in three different locations for a total of nine drops. The first drop at each location was for assembly conditioning and was not included in the average.

<u>Test Data:</u>		Turf + Infill System Over Sub Base	
Location	G-Max Read Drop #2	G-Max Reading Drop #3	Average G-Max Reading
1	93	95	94
2	96	101	99
3	89	92	91
<b>OVERALL GMAX:</b>			<b>95</b>

<u>Test Data:</u>		Turf + Infill System + 4 oz Filter Fabric + AirDrain + 10 oz Filter Fabric Over Sub Base ↓	
Location	G-Max Read Drop #2	G-Max Reading Drop #3	Average G-Max Reading
1	74	77	76
2	76	79	78
3	76	79	78
<b>OVERALL GMAX:</b>			<b>77</b>

**Conclusion:** Use of the filter fabrics and AirDrain with infilled synthetic turf reduced Gmax attenuation 18.9% verses Gmax attenuation which employed just the turf + infill system using the same sub base.



## Test Report

<b>CLIENT:</b>	AirField Systems	<b>REPORT NUMBER:</b>	<b>56765A</b>
	8028 N. May Avenue Suite 201	<b>LAB TEST NUMBER:</b>	2497-5010
	Oklahoma City, OK 73120	<b>DATE:</b>	December 7, 2012
		<b>PAGE:</b>	1 of 2

**Synthetic Turf Description:** 46 oz/yd<sup>2</sup> Monofilament/Slit Film Fiber  
 2.25" Pile Height Monofilament / 2.125" Pile Height Slit Film  
 9.25 oz/yd<sup>2</sup> 3 Layer Primary Backing  
 25.1 oz/yd<sup>2</sup> Secondary Urethane Backing

**Infill System Installed:** 3.0 lbs/ft<sup>2</sup> SBR Rubber Mixed with 1.25 lbs/ft<sup>2</sup> Silica Sand

**Underlayment #1:** 10 oz Filter Fabric (Between Sub Base and Drain System)

**Drain System:** Air Drain (Large Opening Up (Per Supplied Specs) Against 10 oz Filter Fabric)

**Underlayment #2:** 4 oz Filter Fabric (On top of Flat Surface Air Drain, Under Turf)

<b>Sub Base:</b>	Concrete
------------------	----------

**Discussion:** Testing Services Inc was instructed to carry out testing on the sample supplied according to the following testing:

- Comparative Gmax or cushioning properties between the turf and sub base system vs. the turf + Air Drain + Filter Fabrics and sub base.

**Material Received:** 27 November 2012

**Note:** The above turf was selected from stock and its construction and infill properties are indicative a "typical" playing field for sports activity.

Approved By:

Erle Miles, Jr V.P., Testing Services Inc

**TSi Accreditation:** Our laboratory is accredited with US Dept of Commerce, National Institute of Standards and Technology: ISO/IEC 17025:2005. Our code # is NVLAP 100108-0. TSi is also recognized as an approved Independent Test Laboratory by the Synthetic Turf Council. However, it should be noted that some or all of the tests performed are not under our scope of accreditation due to the work not fully conforming to the standard, or it being outside the scope of our accreditation, or subcontracted.

**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.

**Testing Atmosphere:** Unless otherwise noted, all testing was conducted under standard lab conditions of 20± 2°C and 65 ± 4% r.h.



Report Date: 7 December 2012  
 Report #: 56765A  
 Page #: 2 of 2

Client: AirField Systems

Date of Test: 7 December 2012

Test Conditions: 68°F 42% RH.

Procedure: **ASTM F355-10a: Standard Test Methods for Shock-Absorbing Properties of Playing Surface Systems and Materials ( Procedure A)**

Data obtained from this test method are indicative of cushioning properties of the playing surface system and materials under the specific conditions selected. The playing system is impacted at a specified velocity with a missile of given mass and geometry to determine the maximum value of *G encountered during impact*.

The test set-up was positioned over the sub base with the clearview bumper II (gmax test equipment) placed level over the entire system. The missile was released, so as to impact the center of the assembly at a velocity of 3.43 m/s at a drop height of 24". Three drops were made at 3 minute intervals. This procedure was repeated in three different locations for a total of nine drops. The first drop at each location was for assembly conditioning and was not included in the average.

<u>Test Data:</u> Turf + Infill System Over Sub Base			
Location	G-Max Read Drop #2	G-Max Reading Drop #3	Average G-Max Reading
1	102	105	104
2	110	112	111
3	110	112	111
<b>OVERALL GMAX:</b>			<b>109</b>

<u>Test Data:</u> Turf + Infill System + 4 oz Filter Fabric + AirDrain + 10 oz Filter Fabric Over Sub Base ↓			
Location	G-Max Read Drop #2	G-Max Reading Drop #3	Average G-Max Reading
1	90	93	92
2	91	95	93
3	92	96	94
<b>OVERALL GMAX:</b>			<b>93</b>

Conclusion: Use of the filter fabrics and AirDrain with infilled synthetic turf reduced Gmax attenuation 14.7 % verses Gmax attenuation which employed just the turf + infill system using the same sub base.