



TEST REPORT

CLIENT:

| | | | |
|---------------|---------------------------------|-----------------------|-----------|
| Company: | Airfield Systems | Report Number: | 70789 |
| Address: | 8028 North May Avenue Suite 201 | Lab Test Number: | 2914-2505 |
| | Oklahoma City, OK 73120 | Test Completion Date: | 5/17/17 |
| | | Report Date: | 5/19/17 |
| Requested By: | Michael Bean | Page: | 1 of 2 |

TEST MATERIAL:

| | | | | | | | |
|----------------------|--|-----|-------|--|----------------|---------|-----------|
| Material Type: | Synthetic Turf with Infill System over AirField Drainage System | | | | Date Received: | 5/17/17 | |
| Material Condition: | EXCELLENT: | XXX | GOOD: | | POOR: | | REJECTED: |
| Turf Identification: | PlaySafe 50 | | | | | | |
| Infill System: | 2.0 lbs/ft ² HydroChill® (Bottom Layer) + 1.0 lbs/ft ² Silica Sand (Top Layer) | | | | | | |
| Underlayment: | AirField AirDrain Drainage System | | | | | | |
| Base: | Concrete | | | | | | |

TESTING METHODS REQUESTED:

| | | |
|--|---------------|--------------|
| Testing Services, Inc. was instructed by the client to perform the following testing | | |
| Standard: | ASTM F3189-17 | Test Method: |
| Standard Test Method for Measuring Force Reduction, Vertical Deformation, and Energy Restitution of Synthetic Turf Systems Using the Advanced Artificial Athlete | | |

SAMPLING PLAN:

| | |
|---|---------|
| Sampling Date: | 5/17/17 |
| <ul style="list-style-type: none"> • Specimen sampling is performed in the sampling department at TSI. • The sampling size of specimens is determined by the test method requirements. • 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. • All samples are subjected to the outside environmental conditions of temperature and relative humidity. • 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 | |

DEVIATION FROM TEST METHOD:

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

TEST OVERVIEW:

Force Reduction/Energy Restitution

A mass with an attached spring is dropped onto the test surface. The force reduction is calculated by comparing the percentage reduction relative to a reference force (concrete) recorded of the acceleration of the mass from the moment of release to impact of the surface. The impact forces simulate those produced by lower extremities from landing during sporting events.

Vertical Deformation

This test method determines the foot stability of the test surface as a player runs across it. A proper deformation value can prevent excessive fatigue and strains to muscles and joints. Vertical deformation is measured using an Advanced Artificial Athlete which uses a mass, with a spring attached to it, to fall onto the test piece, recording the acceleration of the mass from the moment of release till after its impact with the test surface. The values derived from dropping onto the test surface are comparatively analyzed to dropping onto concrete.

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| Form: | Rev: | Revision Date: | Page 1 of 2 |
| Release Date: | Control Type: Electronic – Expires 24 hours after this date: May. 19, 17 Printed copies are uncontrolled | | |

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| Base: | Concrete | | | | | | |

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TEST DATA:

| | |
|-------------------------|---------------------------------|
| Test Conditions | 79°F 43% RH |
| Test Date/Time | 5/17/17 @ 12:15 PM |
| Test Equipment | AAA Advanced Artificial Athlete |
| Calibration Certificate | IST Consulting GmbH Switzerland |

FR: Force Reduction ER: Energy Restitution

| Location | Drop 1 | | Drop 2 | | Drop 3 | | Average (2,3) | |
|------------------------|--------|------|--------|------|--------|------|---------------|-------------|
| | FR | ER | FR | ER | FR | ER | FR | ER |
| 1 | 46 % | 40 % | 41 % | 47 % | 41 % | 45 % | 41 % | 46 % |
| 2 | 46 % | 41 % | 41 % | 44 % | 40 % | 53 % | 41 % | 49 % |
| 3 | 47 % | 40 % | 41 % | 49 % | 37 % | 55 % | 39 % | 52 % |
| 4 | 44 % | 42 % | 36 % | 54 % | 34 % | 59 % | 35 % | 57 % |
| OVERALL AVERAGE | | | | | | | 39 % | 51 % |

Vertical Deformation

| Location | Vertical Deformation Drop #1 | Vertical Deformation Drop #2 | Vertical Deformation Drop #3 | Average Deformation (2,3) |
|------------------------|------------------------------|------------------------------|------------------------------|---------------------------|
| 1 | 5mm | 4mm | 4mm | 4mm |
| 2 | 6mm | 4mm | 4mm | 4mm |
| 3 | 6mm | 5mm | 3mm | 4mm |
| 4 | 5mm | 4mm | 4mm | 4mm |
| OVERALL AVERAGE | | | | 4mm |

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 performed are in compliance with stated test method.

Test Report Approval: Erle Miles, III, Lab Director
Testing Services Inc



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