For Natural Turf Sideline/Perimeter Drainage

Using AirDrain for the perimeter and sideline drainage is an excellent way to cheaply drain a pop up field. The AirDrain can be installed along the field in a 32" x 12" deep trench and to a collector at each end of the field. Using a USGA spec sand the trench should drain 12 to 15 inches and hour. And the grid itself dependent on slope should drain between 40 and 50 gallons per sqft per minute. Another advantage is that the sidelines should stay dry and playable for the sideline players and coaches. Also the turf on top of the AirDrain should be the best turf on the field. Ease of installation and peak performance brings value to your project.

Click here for more information about the study titled “A Comparison of Water Drainage and Storage in Putting Greens Built Using Airfield Systems and USGA Methods of Construction”.

Benefits of an AirField System Design include:

- 1 to 3 more days of plant available water stored in the root zone (depending on climate)
- Significantly reduces daily irrigation needs (as told to us by our customers)
- Healthier turf / stronger root system (as told to us by our customers)
- 100% Vertical Drainage under the entire playing surface
- AirDrain is a 100% recycled copolymer which has the impact modifier “metallocene” added to it for qualification as a “No Break” plastic, making it able to withstand extreme heat and cold and still maintain performance
- Helps eliminate standing water / simplifies maintenance (as told to us by our customers)
- Minimal site disturbance / far less excavation and disposal
- Several installation days are saved over a gravel installation
- Compact shipping which reduces overall storage and transportation costs
- AirDrain System sand profiles create its own perched water table

*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.
This is a typical drainage profile, your profile may vary. Check with a Geotechnical Engineer for recommendations for your site conditions and geographical region.
Sideline Drainage Application

See Detail A below

Crowned field sloped to sideline

Sideline/Perimeter

Crowned field sloped to sideline

Language pins

Sideline

USGA Spec Sand Mix
95% Sand/5% Organics
*per architect/engineer

6oz. Filter Fabric

AirDrain Geocell

10oz. Filter Fabric

Sideline/Perimeter Drainage

AirField Systems

3/22/2015

G. Abdo

Air Field Systems

USGA Spec Sand Mix
95% Sand/5% Organics
*per architect/engineer

6oz. Filter Fabric

AirDrain Geocell

10oz. Filter Fabric

DETAIL A

A
This is a typical drainage profile, your profile may vary.

Check with a Geotechnical Engineer for recommendations for your site conditions and geographical region.

AirDrain™ Natural Turf Typical Detail
AirDrain™ Impermeable Natural Turf Detail

*per geotechnical engineer

www.airfieldsystems.com
Airdrain_Nat_Turf_Typical_Detail_002.idw
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)

AirDrain Cross Section

Typical

For AirDrain Grass Systems
Proper Sequencing and Orientation of AirDrain GeoCell Panels for Rapid Installation

Pallet Staging: AirDrain pallets cover approximately 798sqft. per pallet and should be staged accordingly within the installation area so that you minimize the amount of time to stage the AirDrain grid along the install lines across the project. Typically placing the AirDrain every 65 feet across and 15-20 feet back from each other. (Call AirField with questions that you might have about proper staging and installation.)

All Installations must start in the Top Left Corner of the Field and work Left to Right to be installed properly.

1. Orientate the AirDrain GeoCell materials with the integral indicator tab to the panel's bottom left corner (painted yellow). Install the AirDrain units by placing units with the connectors and platforms up creating a flat surface for the profile above. If the male connectors do not fall or drop into the female connectors then the orientation is incorrect, please call AirField Systems Immediately at 405-359-3775.
2. Install the AirDrain panels across the field in a rowed pattern. Staggering of rows will allow for multiple row completion by a multi-manned crew.

3. Once the first row has progressed across the project, start with a second row. Have a person staging the panels in groups of three snapped together along the row. The crew can then install the left side of the panel while elevating slightly the top portion (so the male and female connectors don't touch each other). Once the left side has been snapped with a pull along the row direction, the top portion should fall into place and with a bottom vertical pull holding the inside of parts 1 & 3 snap all three parts in place.

4. AirDrain panels can be shaped to individual field areas as needed with appropriate cutting device. If a typical field is installed correctly there should only be two sides that would need to be trimmed.
   
   A. If only a few parts need to be trimmed, use tin snips.
   
   B. If many parts require trimming, set up a table and use a circular saw with a no melt, plastic cutting saw blade.

Visit AirField Systems Flickr page to watch a video of a 74,000 sq ft project for Chesapeake Energy illustrating a 3 man crew installation.

DISCLAIMER: The preceding and following drawings and/or general installation guidelines are provided only to show a concept design for installation and are not instructions for any particular installation. These drawings and general instructions are not complete and are provided only to assist a licensed Geo-Technical Engineer, a Landscape Architect and/or Civil Engineer in preparing actual construction and installation plans. These drawings and instructions must be reviewed by a licensed Geo-Technical Engineer, a Landscape Architect and/or Civil Engineer and adapted to the condition of a particular installation site and to comply with all state and local requirements for each installation site. THESE DRAWINGS AND/OR GENERAL INSTRUCTIONS DO NOT MODIFY OR SUPPLEMENT ANY EXPRESS OR IMPLIED WARRANTIES INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IF APPLICABLE RELATING TO THE PRODUCT.
### General Information

**General**

<table>
<thead>
<tr>
<th>Construction</th>
<th>Injection Molded Copolymer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composition</td>
<td>Copolymer Polypropylene Using an Impact Modifier</td>
</tr>
<tr>
<td>Dimensions</td>
<td>31.784” x 31.880” x 1.000” (7.03 sq ft.)</td>
</tr>
<tr>
<td>Unit Weight</td>
<td>3.1 lbs.</td>
</tr>
<tr>
<td>Material</td>
<td>Resin Pellets</td>
</tr>
</tbody>
</table>

**Shipping**

<table>
<thead>
<tr>
<th>Parts Per Pallet</th>
<th>114</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallet Dimensions</td>
<td>33” x 33” x 48”</td>
</tr>
<tr>
<td>Pallet Weight</td>
<td>390 lbs.</td>
</tr>
<tr>
<td>Area Coverage Per Pallet</td>
<td>798 sq. ft.</td>
</tr>
<tr>
<td>Pallets Per Trailer</td>
<td>114 (3 wide x 2 tall x 19 deep)</td>
</tr>
<tr>
<td>Area Covered Per Trailer</td>
<td>90,972 sq. ft.</td>
</tr>
</tbody>
</table>

### ASTM and ISO Properties

<table>
<thead>
<tr>
<th>Physical</th>
<th>Nominal Value</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Gravity</td>
<td>0.940</td>
<td>ASTM D792</td>
</tr>
<tr>
<td>Melt Mass-Flow Rate (230°C/2.16 kg)</td>
<td>20 g/10 min</td>
<td>ASTM D1238</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mechanical</th>
<th>Nominal Value</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>57.490 lb/ft³</td>
<td>ASTM D1505</td>
</tr>
<tr>
<td>Tensile Strength (Yield, 73°F)</td>
<td>2,145 psi</td>
<td>ASTM D638</td>
</tr>
<tr>
<td>Tensile Elongation (Yield, 73°F)</td>
<td>16%</td>
<td>ASTM D638</td>
</tr>
<tr>
<td>Flexural Modulus (73°F)</td>
<td>100,175 psi</td>
<td>ASTM D790</td>
</tr>
<tr>
<td>Compression Strength (73°F)</td>
<td>233 psi unfilled</td>
<td>ASTM D6254</td>
</tr>
</tbody>
</table>

### Thermal

<table>
<thead>
<tr>
<th>Temperature Under Load 264 psi, Unannealed</th>
<th>Nominal Value</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deflection Temperature</td>
<td>160°F</td>
<td>ASTM D648</td>
</tr>
</tbody>
</table>

### Expansion/Contraction Index

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Humidity</th>
<th>Length</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>100°F</td>
<td>98%</td>
<td>31.881”</td>
<td>31.817”</td>
</tr>
<tr>
<td>-5°F</td>
<td>0%</td>
<td>31.765”</td>
<td>31.713”</td>
</tr>
<tr>
<td>Change</td>
<td>.116”</td>
<td>.104”</td>
<td></td>
</tr>
<tr>
<td>Joint Expansion/Contraction Capacity</td>
<td>.420”</td>
<td>.572”</td>
<td></td>
</tr>
<tr>
<td>Safety Factor</td>
<td>362%</td>
<td>550%</td>
<td></td>
</tr>
</tbody>
</table>

### Examples of Usage

<table>
<thead>
<tr>
<th>Application</th>
<th>Required Strength</th>
<th>Safety Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto</td>
<td>40 psi</td>
<td>x 168</td>
</tr>
<tr>
<td>Truck</td>
<td>110 psi</td>
<td>x 61</td>
</tr>
</tbody>
</table>

---

1 Independent laboratory testing conducted by TRI/Environmental, Inc., TSI/Testing Services, Inc. and Wassenaar.
100% Post Manufactured Content

Recycled

The AirDrain GeoGrid is made of 100% post-manufactured material, you can feel good about helping the planet while adding valuable LEED Points to your project! We also add an impact modifier for incredible strength and superior performance in extreme heat and cold - on top of the already durable AirDrain design.

AirDrain Co-Polymer with an Impact Modifier Performance and Temperature Durability

Attached you will find the specification of the resin used to produce both the 32 x 32 and the 32 x 18 Geo cells. This material is a co-polymer polypropylene that is 100% recycled resin. In order to be able to produce a consistent recycled resin a PIR (post industrial resin) is used for the base resin. This is the only way to produce a consistent material as opposed to a PCR (post consumer resin) which is dependent on the consumer to supply a consistent material. Using the PIR as a base resin 3% carbon black is added to insure good UV stabilization and metallocene (an ethylene base material) is used as an impact modifier.

Impact Modifier

The impact modifier is added in an amount to achieve a 10.0 Notched Izod Impact which comfortably qualifies this material as a NO BREAK material (4.0 and greater are normally considered no break material). The AirDrain resin offers an advantage over many ethylene and HDPE products since the AirDrain resin is often superior when it comes to pliability, warping and internal stress related issues. Referring to the attached specification sheet you will notice that all testing is done to specific ASTM Standards.

Resin Blends

AirDrain’s blend of resins gives it the ability to perform in extreme temperatures. AirDrain does not need a temperature above 50 degrees Fahrenheit to be installed or warmed in the sun to be pliable on site for install. In addition, AirDrain's unique resin blend also helps prevent breakage and cracking in extreme temperatures, thus giving it the ability to withstand repeated freeze thaw cycles.

Airfield posts its resin content and performance values with ASTM test methods and guide lines to measure the properties of our grid.