

TurfTalk

DRAINAGE

VOLUME 5





Before the introduction of FieldTurf, rainy days and outdoor fields translated into field maintenance, field resting, game delays, game cancellations, aggravations and time consuming rescheduling. FieldTurf, identifying the need, created the first naturally porous all-weather infilled artificial turf system. The goal was not only to design a field that would remain consistent on a daily basis, but one that could also maintain its composition, consistency and playability levels during or shortly after the course of a heavy rainfall.

FieldTurf's success as an all-weather artificial turf system is due largely in part to the permeability of its backing and the quality of the base upon which the FieldTurf field is installed. FieldTurf's backing is naturally 40% porous thanks to a patented finger coated system. In order to secure the fiber's tuft bind, a coating is only applied along the fiber rows, allowing for the remainder of the backing to be made available for drainage (Figure 1).



Figure 1.
FieldTurf's patented finger coated backing:

Drainage occurs consistently throughout the backing alongside the coated fiber rows.

FieldTurf's engineers understood that the design of FieldTurf's backing alone was not enough to promote effective draining. Without a quality base in place to channel the drainage flow the field would be incapable of managing rainfall. In order to be sure that each FieldTurf base was built for durability and functional drainage, FieldTurf created a unique in-house engineering and design service. This free service has been helping our customers create a base that caters to both the specific needs of their site and their turf, ensuring that their FieldTurf all-weather turf system maintains a consistent drainage rate.

Despite FieldTurf's unique coating feature which allows for

water to quickly pass through the turf system, it is important to understand that the overall drainage depends heavily on the quality of the underlying base. When compared to the speed at which rain water passes through the turf, base drainage often occurs at a substantially slower rate. In most instances, the turf system will drain anywhere from 5 to 10 times faster than the base.

With that being said, the most critical component in a field's drainage performance revolves around the design of the base and the quality of its materials and construction.

In addition to the quality of the base, the drainage infrastructure into which the base drains must be capable of managing large amounts of water. In most cases, complications with the underlying base or infrastructure prove to be the limiting factor in drainage performance. With so much relying on the quality of the subsurface structure we recommend that all of our clients take advantage of our free base design and engineering service in order to realize the full drainage potential of the FieldTurf product.

Contrary to the FieldTurf product, most turf systems are not naturally porous. In order to facilitate drainage in non-FieldTurf products perforated holes are literally burnt into the turf's backing. These burnt perforations are created with the help of a machine whose heated tips burns holes directly into the turf's backing (Figure 2). Unfortunately the sizes of these holes tend to vary depending on how long the machine has been running. Earlier in the day, when the machine has not yet reached its maximum temperature, the perforations produced tend to be smaller in size than the perforations produced later on in the day. These inconsistencies tend to result in varying degrees of permeability throughout the perforated turf system.



Figure 2.
Competitor's perforated backing system:



Drainage only takes place in the few isolated areas that have been burnt through. Notice the inconsistencies in size from hole to hole. Adding to the complications, loose infill and fibers which have either been set free or melted down during the burning process can often settle within the perforated holes (Figure 3&4). As a result, clogging can occur which ultimately reduces the turf's ability to effectively drain.



Figure 3.
Example of competitor's perforated backing failure:

Another example of a non porous backing with burnt holes. In this case the melted fibers have shifted and are now lodged within the drainage hole. This will ultimately affect this field's ability to drain.



Figure 4.
Close up of a competitor's clogged drainage hole

In addition to perforated inconsistencies, burnt turf backing affects the overall dimensional stability of the field. Each puncture into a turf's backing will increase the likelihood of unwanted turf

shifting and tearing. The turf backing forms the frame of the field. With each slice that frame becomes more and more brittle. In some instances, the field becomes so fragile that it can no longer withstand the impact of the athletes who play on it. This is the stage at which tearing occurs. These tears lead to dangerous hollow turf zones, excessive infill migration and a potentially large repair bill.

With regards to the turf's infill, FieldTurf is the only company to incorporate cryogenic rubber and silica sand, while the competition tends to use a loose, all-ambient rubber system. The loose and jagged rubber strands found in ambient rubber make it highly vulnerable to migration and floatation caused by the air bubbles in water. Even though the specific gravity of ground rubber is about 1.14 (slightly heavier than water) if there are enough air bubbles attached to the rubber, it will float.

Unfortunately, as the all-rubber infill begins to shift, rubber particles can build up inside the isolated drainage holes, preventing water from flowing freely through and away from the field's surface. The use of cryogenic rubber works to promote effective and consistent drainage in the FieldTurf turf system by eliminating the potential for migration caused by water. The cryogenic rubber's smooth and rounded shape facilitates a consistent flow of water through the infill without raising and displacing any rubber. With the FieldTurf turf system you never have to worry about blocked drainage since the porous areas are too fine for the infill particles.

With a patented finger coated backing system and a quality FieldTurf base, FieldTurf fields effectively removes water from your surface almost as quickly as it arrives on site, keeping your players and field safe and functional for years of consistent all-weather play.



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