Protect the Player. Protect the Planet.

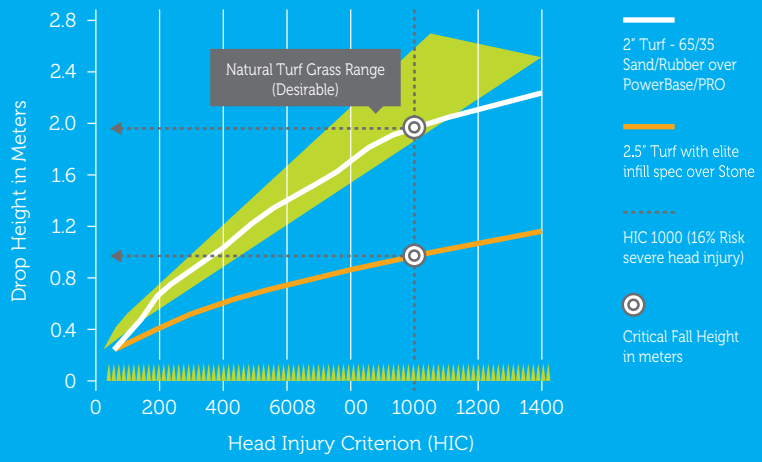
POWERBASE PRO®
BY BROCK

"We wanted the best. We wanted to do what we could to ensure the safety of our student-athletes. That's our number one priority."

Source – Jason DePaepe, Associate Athletic Director - CU Boulder

Quality Natural Grass: The Benchmark for Safety

A great artificial turf field should mimic a great natural one, and when it comes to head injury, that's even more critical. Head Injury Criterion (HIC) is the internationally recognized test standard for head injury. You want your field to have the highest Critical Fall Height (CFH) possible. When PowerBase/PRO is used under a quality infilled turf system, CFH can replicate the finest natural grass fields – the benchmark for safety. Installing infilled turf directly over stone base results in a much lower CFH, which increases both the likelihood and severity of head trauma. No other shock pad technology can achieve the CFH of Brock systems while providing a firm running surface.



. . . and softness.

The "Future of Football" is shock pads under turf.

Source – NFL Advertising Campaign, 2016

1 in 5

1 in 5 concussions involves the head hitting the surface.

Source – Concussion Legacy Foundation

24%

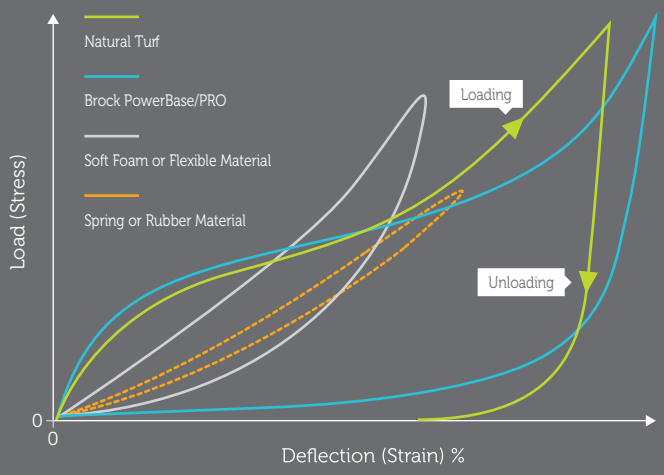
Head to surface impacts were the primary exposure for 24% of diagnosed concussions.

Source – NFL Study of 2015 Season

PowerBase/PRO shock pads are highly engineered in shape, thickness, and density to provide a consistent, firm surface for running (which elite athletes demand), but a forgiving surface during falls and tackles. This unique quality is why Brock PowerBase/PRO is the premier manufactured shock pad technology installed at the pro and collegiate levels.

An impact with PowerBase/PRO produces a dynamic response closely resembling natural sports turf. The load-deflection curve shown here illustrates the similarity between the response and recovery of the PowerBase/PRO (blue) as compared to natural turf (green). Underlayments with polyethylene foam (gray) and rubber (orange) produce a deflection curve very different from natural turf, which results in an unnatural response to athletic impact force.

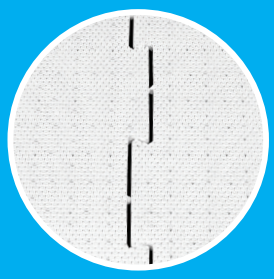
Energy absorption and recovery



The right balance of stiffness . . .

Your brain and body are too important

An elite athlete's brain and body are of paramount importance for their health and career. Every detail of Brock PowerBase/PRO is engineered for elite level athletes. The system has been precisely tuned for athletes who put greater stresses on the field than their smaller, lighter counterparts. Fields built with PowerBase/PRO reduce the ground impact forces for ankles, knees, and head, without compromising surface stiffness.

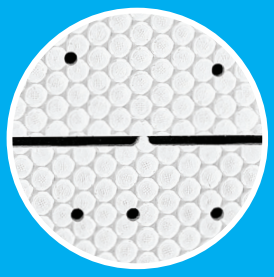


PRECISE

Precise interlocking system provides stability.

RESPONSIVE

Micro-pistons efficiently absorb and dissipate impact force

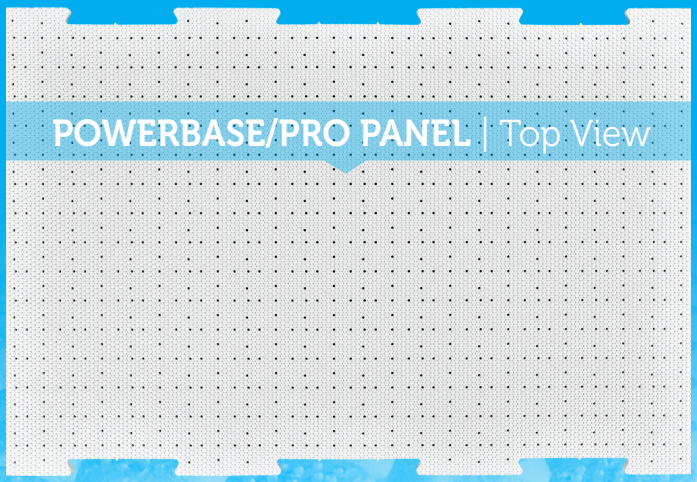


SMART

Engineered controlled tolerance for easy installation.

EFFICIENT

Bidirectional drainage channels transmit water to nearest collector.



The Test

HIC (Simulated Head Impacts)

ASTM F355 E Missile

HIC is the internationally recognized test standard to estimate the risk and severity of potential head injury outcomes. The test drops a 10 lb hemispherical head form surrogate from increasing heights to determine Critical Fall Height (CFH). This test is used for playgrounds, automotive crashes, wall padding, pole vault, and the World Rugby standard for artificial turf. The higher the CFH, the more protective the surface is for head injuries.

G-MAX (Body Impacts)

ASTM F355 A Missile

Developed in the 1970's, this test method has been used to measure impact performance of artificial turf athletic fields. The A missile G-Max is a repeatable, predictable test that can be used to generically compare surface hardness between natural and artificial playing surfaces, but it does not correlate to head injury. It drops a 20 lb flat missile from 24". G-Max is a useful measurement when used in conjunction with HIC above, but as a stand alone test is not a total measure of field safety.

VERTICAL DEFORMATION (Firmness Under Foot)

EN14809 Vertical Deformation

This test simulates the foot strike of an average adult running athlete. The test measures the vertical compression under a foot impact to determine surface firmness during play. A quality natural sports turf field produces the "sweet spot" of an optimal narrow range for surface firmness while at the same time having very low G-Max and very high Critical Fall Height. This is why quality natural grass is the benchmark for quality artificial turf.

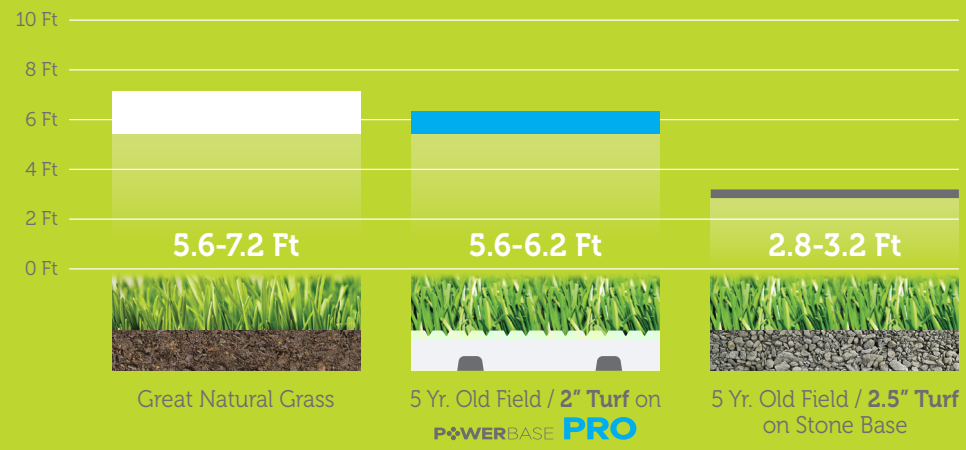
Perfect Natural Turf: The Benchmark

An artificial turf system should be as safe as great natural grass. So how do they compare?

The Testing Device

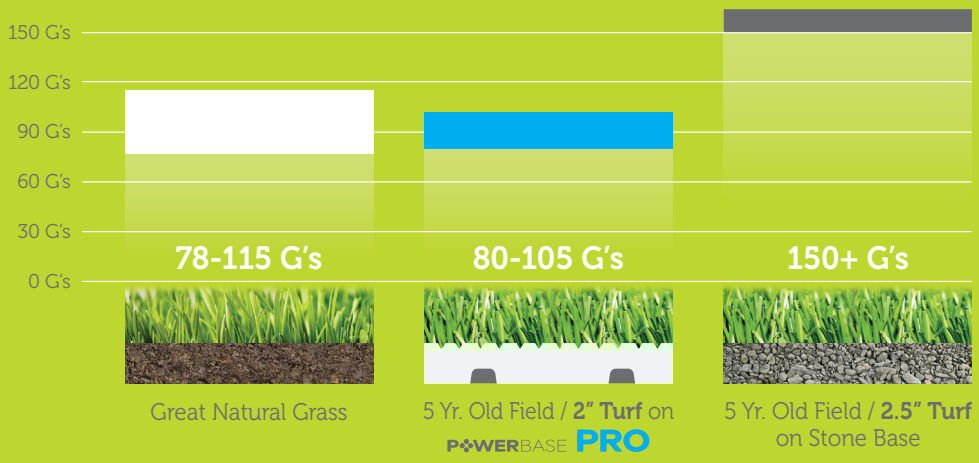
1

Critical Fall Height **(Higher Is Better)**



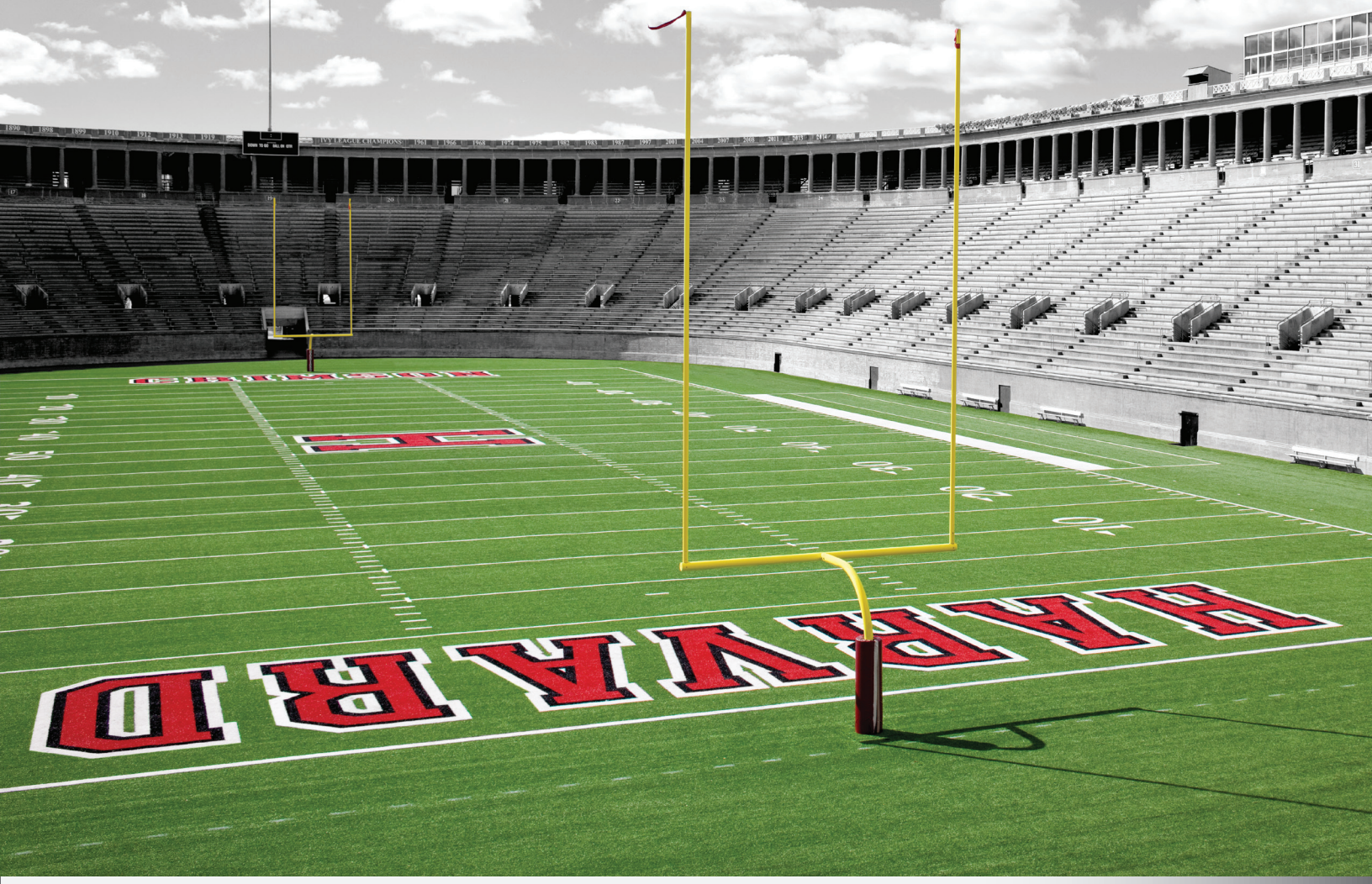
2

G-Max **(Lower is Better)**



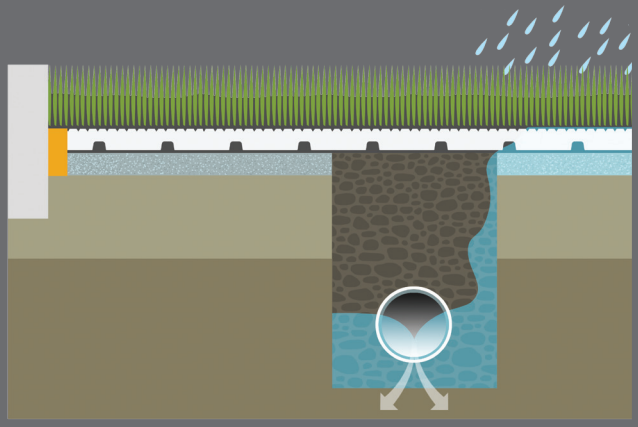
3

Vertical Deformation **("Sweet Spot" for Speed and Agility)**



Proven, fast drainage

At 700" / hr, Brock PowerBase/PRO has a much higher vertical drainage rate than the artificial turf, and large lateral channels that help transport water to the collector system along the edge of the field. PowerBase/PRO enhances field drainage with a predictable, proven system.



BROCK®
IMPROVING THE FIELD OF PLAY

US Patents: 8,236,392, 8,353,640 and D637318 and other patents pending.

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