

# Footings: Which Surface is the Best?

By Charlene Strickland  
 Edited by Linda Liestman

**E**very horse appreciates sure footing whether on the track or the trail. As the equine athlete traverses upon a footing environment, his body impacts against that surface as his hooves hit the ground while he trots, gallops, and leaps. The surface responds to his footfalls and helps or hinders his movements. Ideal footing feels alive; it accepts pressure without causing pain and it feels safe and secure. The right footing gives the horse confidence to move and perform according to the rider's wishes. The arena owner or manager will want to consider sport-specific footing that helps the equine athlete achieve the best performance while reducing the potential for injuries.

## DRESSAGE

In dressage, riders seek lightness. The dressage horse should move on the level with spring, balance, buoyancy and fluid motion. As the dressage horse moves about the arena, he digs into the ground as he pushes up and off to propel forward with impulsion, precision and brilliance. He is asked to move from contraction and collection of his body to quick, smooth, balanced extensions, and then back to collecting again. To show the desired elastic gaits, the horse moves with flexible joints and vigorous action. An elastic, resilient footing surface aids the dressage horse's performance.

A good base for a dressage arena should be four to six inches thick. Wayne Gregory of the Interland Group's Footings Unlimited defined the top layer: "The standard is to start with two to three inches of a good clean, articulated coarse sand. This articulated sand has jagged edges, so the sand will overlock. Look for glacial or silica sand, which is coarse and angular. Typical 'beach' sand is too fine, round, and smooth to provide a firm support."

The dressage horse needs airy ground to demonstrate suspension or lofty gaits. Particles large and small "bridge," or meet unevenly to allow minute pockets of air. As the horse steps on the particles, he's "walking on air." Gregory says, "For dressage, what's most important is the consistency and a footing that provides a lot of 'cush'." He defines 'cush' as reduction of the impact when the hoof sets down. Riders may confuse this with bounce or the footing springing back. "You have to get a balance between cushion and bounce," explained Gregory. "If the footing pushes up, the bounce looks animated." He added that riding on footing that contains too much shredded rubber, a popular footing additive, could add too much bounce. The extra shock waves can affect the horse's skeletal system and reward the horse for livelier movement. The horse can look "flat" on another less springy surface.

## JUMPING

For a hunter or jumper, the ideal trip over a course is the horse flowing in a series of bounds, with the speed varying as the rider signals the horse to collect or extend his gallop. The adroit jumper demonstrates a leap that is as smooth as an extended stride, and each foot should land exactly where you intend.

As this equine athlete launches from the ground, he needs traction and a stable platform for his hind legs. The jumper flexes and sits back on his hocks as he thrusts his body mass upward. His hind legs engage almost simultaneously in the push off. As the horse prepares to land, he unfolds his front legs to extend them in front of his body. The higher the fence, the sharper the angle of descent.

From bearing his entire weight on his front legs in the gallop stride and landing, the jumper experiences fatigue. He lands first on his leading forefoot. Pounding his weight on hard ground punishes him. Landing, he appreciates a slight give as the ground absorbs his energy. "The footing should be sufficiently loose to give one-quarter to one-half inch," explained Gregory. "The horse can't stick like a gymnast, and the footing has to have a little give and slide so the horse continues his momentum."

Here the base should be six to twelve inches thick. Jumpers perform better over fences with a footing that's more compacted than is required for the dressage horse. Gregory noted that the mix here could be 70 percent clay and 30 percent sand. The depth shouldn't slow the horse down as he gallops over the course.

## REINING

Every reining pattern combines a series of maneuvers. The reining horse moves from lope to gallop in the circles, changes leads, and accelerates on the run-downs. He collects and slides into a stop, while planting a hind foot for fast, flat turnarounds.

Events like the National Reining Horse Association Futurity and Derby attract hundreds of competitors, and Illinois farmer, Robert Kiser, cares for the footing. Kiser says, "We have to achieve a balance between three things. First, make it as easy as you can on the horse's body and legs. Second, is good traction, and third, is to have a soil type through which the horse's feet move easily. It's complicated to have all three at one time." He noted that reining events formerly used sand, which had to be deep to avoid slickness, but not so deep as to strain the horse. Through years of experimentation, he has blended more silt into the footing, seeking just enough mix between loose and solid.

**continued on page 38**

**continued from page 37**

He relies on his eye to gauge how footing performs. "We've got pretty much of a 50 percent pure sand mixture with a silty type of sand," he explained. "We still start with a pure sand, and add silt to it till the texture is about right. With too much sand, it compacted too fast."

## CHOICES AND UPKEEP

Different performance footing produce different reactions. When you study your performance environment, decide on your goals. For safe footing, consider traction, aeration, watering, depth, consistency, and abrasion. Realize that no single recipe satisfies every sport or fits every arena. Research studies have focused on the effects of the track surface on racehorses, not the performance horse.

High-tech footings can give you an all-weather riding surface. Current choices include polymer-coated sand and processed wood fibers. You can enliven your footing through aeration, like blending an additive into a sand arena. An additive such as ground rubber can add "fine-tuning" to adjust the performance of the riding surface. "We've found that less of an additive is better," says Gregory. "Never add more than one pound per square foot, mixed in with sand." He reported that the biggest footing error he sees is owners mixing in

too much additive.

For a typical 72' by 180' arena, costs of surfaces or additives can run from around \$500 to \$40,000 for a complete new installation. Average costs run from \$2,000 to \$4,000.

All surfaces require upkeep and eventual updates. "For long-term health, the key is a maintenance program," says Gregory. He advises regular dragging of the arena and hand raking to smooth the track. "In an arena, you develop a track on the outside, along the rail. As horses go over the same spot, they pound it and condense it. The footing shears against the sides, and you build a pit. Once a month, rake or shovel the edges back in, to pull the footing off the rail."

He also cautioned about inconsistent footing, such as potholes in the footing's coarse base that do not show because the holes fill in with upper level footing material. He warns, "This is the biggest cause of injuries, a hidden cause because the base is so inconsistent. Or you can have a track beaten down, with four to five inches of sand on the edges, and only one inch in the middle."

Traditional footings require watering to control dust and add cushion. Gregory advised a moisture content of eight to fourteen percent, measured with a moisture meter. He noted to aim for the lower percentage on clay, and higher on sand.

## ARENA FOOTING 101

**F**ooting should begin with a base, or solid foundation beneath the riding surface. In a well-designed arena, this is a hard layer of compacted, crushed stones. The base acts like a roadbed, and it allows water to drain from the area. On top is the riding surface, which is not too soft or too firm.

Most people ride on natural dirt (soil) particles or ground-up rock. Soil includes the three components of clay, silt, and sand. The percentage of each affects the movement of soil, either positive or negative. Particle sizes and shapes also contribute to the ground's composition and performance, as fines, or microscopic particles, tend to pack or cause dust.

Among all disciplines, sand is a typical riding surface. However, California veterinarian and former farrier, David Cos, a specialist in lameness and hoof problems, noted that sand can be abrasive on the soles of the feet: "If you squeeze sand, it's a rock. But squeeze a handful of loamy soil, and you feel the springiness."

Loam is a rich, easily pulverized soil containing a relatively equal mixture of sand and silt and a somewhat smaller proportion of clay. Silt is made up of extremely fine mineral particles. Sand is made up primarily of individual rock or mineral fragments that are from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. Clay consists of mineral soil particles that are less than 0.002 millimeter in diameter. The amount and kind of clay greatly affect the physical condition of soil. Clay content deter-

mines the ability of the soil to absorb and retain moisture. It influences shrink-swell potential, permeability, and plasticity, and the ease of soil dispersion.

All soil contains some level of organic soil materials. Organic soil matter is defined as plant and animal residue at various stages of decomposition. Organic soil matter affects the available water capacity, infiltration rate, and tilth of soil, and it contains microorganisms that break down the organic matter and feed the soil. According to STS Products, the addition of one or two wheelbarrows of wood shavings (organic material) per 1,000 square feet will supply the organic material required in healthy arena footing. This company notes that "live" footing thrives on microorganisms that feed the soil.

## A EUROPEAN EXPERT'S ANSWER TO THE BEST FOOTING?

Europe's authority on footing, Hermann Duckek, grooms surfaces for international dressage and jumping events like the Olympic Games and World Championships. For 20 years, international riders have praised his arenas, and some refuse to show unless he has prepared the footing. Last fall at the indoor arena in Stuttgart, Germany, Duckek layered footing 26 centimeters thick on the stadium floor. He built a base of crushed roofing tiles, topped with his blend of sand and shavings. For dressage competitors, he raked the footing, and for jumpers, he rolled it.