



PREMIER
Equestrian

Premium Arena Products for Today's Equestrian Sport

Arena construction and maintenance

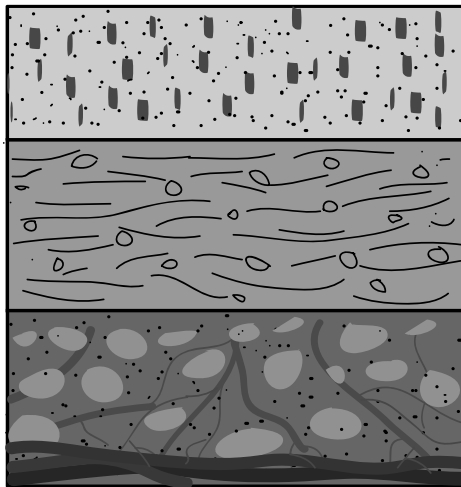
Most everyone who rides horses will agree that good footing is a key component to the successful training, performance, and health of our equine partners. That said, it is helpful to understand why there's more to good footing than what meets the eye.

The ideal arena provides a firm foundation of support in addition to a riding surface with the appropriate combination of resiliency, traction, and cushioning ability. This combination of factors is the reason many of the best arenas consist of three layers.

The bottom layer is often referred to as the sub-base. The sub-base is created by first removing the top-soil from the existing ground, then compacting until the ground reaches near maximum density.

After the sub-base has been prepared, the base layer is constructed. The base layer most often consists of some type of crushed stone screenings which are spread atop the sub-base layer. This base layer is also prepared by using compacting equipment.

The grading, leveling, and compacting of both the sub-base and base is important because a solid, impenetrable, non-slippery foundation is needed to support the riding surface as well as to allow excess water to run off.



**Rubber Crumbs
& Sand**

Base

Sub-base

What is the riding surface?

The riding surface is the footing you can see. The riding surface is the top layer and should be deep enough to minimize the concussion to the horse's legs, but not be so deep it causes muscle and tendon strains. Sand, rubber, wood products and a variety of combinations are commonly used as riding surface materials. In addition to the basics of arena composition, here are a few more points to consider prior to building a new arena or restoring an existing one.

All dirt is not created equal. As identified by Robert Malmgren, soil scientist, in his book, *The Equine Arena Handbook*, there are over 10,000 scientific classifications of soil. In addition to the scientific names, there are common names for the various types of soil. The common names may vary depending on geographic location and

the names adopted by soil brokers and construction crews. During the planning and construction process, it is helpful to describe the soil materials needed in terms of particle size and how they will be used. This will help insure that the soil materials purchased are, indeed, the soil materials best suited for the arena designed.

The perfect vs. the 'good enough' paradigm.

With the expertise and technology available today, creating a near perfect arena is most certainly possible. The major variables to consider are time and money. For many of us, those are one in the same. Here are some factors related to cost that are helpful to consider prior to constructing a new arena or restoring an existing one.

1) Know your dirt. Transporting soil adds greatly to the overall cost. The \$10/ton sand may cost upward of \$100 to transport. Minimize the transport miles by purchasing soil and surface materials locally. Have your future site or existing arena tested to see what kind of soil is currently there. Maybe amending and/or leveling the existing soil will be all that is needed. Transporting heavy earth moving equipment is expensive. Work with a local construction company when possible to cut down on transportation costs.

2) Learn what you can about arena construction or renovation before hiring the boys with the big toys. Talk to other riders, trainers, and equine facility managers. Find out what worked for them, what didn't and why. Ask about the types of problems and maintenance issues they've noticed with the various riding surface materials. Read everything available about arena construction, renovation and maintenance. We've included a recommended reading list at the conclusion of this hand-out.

3) Remember to consider water and drainage before breaking ground. Good drainage is especially important in the design of the outdoor arena. Good drainage will facilitate rapid run off of rain water and increase the number of days the arena is rideable. Proper drainage will also minimize the damaging effects of erosion and frost heave.

Water is an important element in the proper functioning of the riding surface as well as an important dust control measure. This is especially an issue with indoor arenas where some type of watering system will be needed. Consider conservation as well as cost.

4) Arena use equals wear and tear. A heavily trafficked arena will require more consideration during the design phase and also more vigilant maintenance to prevent damage to the base layer. It always costs more to fix a mistake than to do it right the first time.

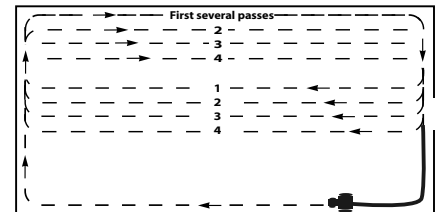
5) When applying the riding surface layer, error on the side of too little rather than too much. It is MUCH, MUCH easier to add more sand or rubber than to remove some because the riding surface is too deep.

An ounce of prevention is worth a pound of cure. This applies to the health of your arena as well as your own health and the health of your horse. Dust control, rut development along the rail, uneven footing and hard or slippery spots can all be minimized by proper arena construction and routine maintenance. Again, it will cost more to fix footing problems after they occur than to prevent them on the front side through proper construction and routine maintenance.

If possible build bigger than is actually needed. This will allow you to vary the position of the dressage rails or jumps, thus cutting down on the likelihood of a 'track' forming where traffic is high.

Ride off the rail now and then. This will help lengthen maintenance intervals. In addition, buy the best harrow you can afford. Harrowing whips air space into the riding surface improving cushioning ability and traction. The best harrowing implements also level a little in the process. A harrow attached with a three point hitch will work better than a drag harrow in many circumstances because a drag harrow tends to 'drag' the surface materials from the low spots to the high spots compounding the problem of unevenness within the riding surface. Embrace the Zen of arena maintenance. Get in touch with your inner hamster. Harrow in a graduating rail-to-centerline circular pattern and do it often. This activity can be counted as a meditation session when done correctly.

Most importantly, design your arena and its maintenance program so that you are spending at least as much time riding your horse as you are your tractor.



A few thoughts about Crumb Rubber...

For centuries horsemen have noted the relationship between the injuries and the surfaces on which horses are ridden. Fortunately, scientific research conducted over the past few decades has greatly contributed to the information now available regarding the performance of the equine athlete. Discerning riders around the globe have embraced these new advances as they seek ways to improve the health, well being, and performance of their equine partners.

During the 1980's Robert Malmgren, a soil scientist working with the Colorado State University Equine Center in Fort Collins, Colorado, sought to improve the footing in the training arenas used to break young horses. His research lead him to the use of crumb rubber in an attempt to decrease the hardness of the footing, thus, minimizing concussion to the young horses' legs and joints. Mr. Malmgren mixed crumb rubber with the sand in one of the training arenas. He found that the resiliency of the riding surface improved greatly by mixing crumb rubber with the existing sand; especially when compared to the control training arena which had no crumb rubber added.

In addition to improving the resiliency of the footing, crumb rubber as an amendment to sand in the riding arena also plays an important role in the reduction of dust. All soils and sand break down overtime. How quickly this breakdown occurs depends on a variety of factors including the original particle size of the sand, the forces of nature like wind, rain, freezing and thaw as well as the abrasive grinding action of machinery or horses' hooves. As the sand particles break down, dust particles form. Dust is detrimental to horses as well as humans. At best dust is an annoyance, collecting on our skin, tack and clothing. Dust is also an irritant causing allergies and asthma to flare up. Sadly, Chronic Obstructive Pulmonary Disease (COPD), an ailment previously associated with long term cigarette smoking, is now also being discovered in horses and is believed to be caused by chronic exposure to dusty living and training conditions.

By mixing crumb rubber with sand, the life of the sand is extended because the abrasive action of one sand particle against another is reduced. The sand particles breakdown less quickly, less dust is formed so less watering is needed. In addition to providing a water conservation measure, crumb rubber takes over 50 years to biodegrade, is non-toxic, and has been used for over a decade as a playground surface, soil amendment and equestrian riding surface.

Premier Equine Footing® is made from recycled tires which have been tested non-hazardous: the concentration of metals and compounds leached is less than EPA primary drinking water standards. Our crumb rubber comes in small, angular pieces approximately 1/4 inch to 1/2 inch in size and is dust and metal free. When choosing crumb rubber footing, note that sizes larger than 1/2 inch may still contain metals and may also become slippery when wet, while pieces which are smaller than 1/4 inch may pack down and prohibit proper drainage.

The ratio of crumb rubber to sand varies depending on how the riding surface will be used. We recommend mixing crumb rubber with sand at a ratio of 1-1/2 to 2 inches of sand to 1/2 inch crumb rubber for a dressage arena, and 1 inch to 1-1/2 inches of sand to 1 inch crumb rubber for a jumping arena.

Remember, it is much easier to start out with less sand and add more if needed than it is to remove sand because the riding surface is now too deep.

Ride safe - choose rubber.

Arena Construction, Maintenance, and Crumb Rubber - by Faye Anderson

For a free sample of our crumb rubber or an estimate please contact us at 1.800.611.6109 or visit www.PremierEquestrian.com

Recommended Reading

The Equine Arena Handbook by Robert Malmgren

Written by a soil scientist with decades of experience dealing with issues and problems associated with equine arena footing, this 126 page paperback is a must read for anyone thinking about building a new arena or restoring an existing one. Available through Premier Equestrian.

Under Foot by The United States Dressage Federation

The USDF Guide to Dressage Arena Construction, Maintenance and Repair

This 36 page booklet guides the reader step by step through the design process and construction of a dressage arena. Concepts and issues addressed are applicable to all types of arenas. We found the "how to" section on drainage and dealing with water run off especially helpful. The booklet also includes a section on arena maintenance considerations, repair strategies and a section on arena mirrors. A bargain at \$9 and available from the United States Dressage Federation at www.usdf.org

"Six Strategies for Arena Repair" by Brian J. Farhey.

Dressage Today, Nov. 2001. Pages 72-79.

This article details repair strategies for common arena problems. Also included is a paragraph or two on how to build an economical leveling implement. Arena maintenance is also address.



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