Arenas and Footing 101

I. Getting Started

A. Evaluate your need for an arena. Three signs you may need an arena:
   1. Are you losing students and boarders to farms with arenas?
   2. Is the area where you ride posing a health/physical threat to your horse (inconsistent ground, holes and ruts, deep going)?
   3. Do you feel you could take your riding to the next level with the help of an arena?

B. Indoor vs. Outdoor and the Turf Arena
   1. An indoor arena is more expensive but more usable
      i. Can be used all year
      ii. Controlled environment
   2. An outdoor arena is less expensive and requires less watering
      i. Environmental moisture helps keep dust down
      ii. Usually has more viewing space for spectators
   3. Turf Arena
      i. A nice Turf Arena can be created on a level surface by using the right grass and topdressing (Topdressing: a mix of sand and either peat moss or crumb rubber that is applied below and above the root system to encourage lush growth and protect the grass)

C. Performance Requirements
   1. What kind of riding will you be doing on the surface?
   2. Volume of traffic
   3. Air Quality issues: Do you or any of your students have asthma, or other respiratory sensitivities? Do you have horses with respiratory sensitivities? Consider the liability regarding air quality.

D. Budget
   1. Avail yourself of resources available to people in your industry
      i. Check out loans/low-interest rates available through "Farm-Friendly" organizations like Mid-Atlantic Farm Credit
      ii. Check your local State Extension Office for help available for local farms and farm planning
      iii. Tax write-offs? Check with a good accountant

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2. Write a business plan to help you determine what you really can afford (even if you aren't in business). There are several great books and software available that are simple and effective
    i. This can help you easily determine what you can actually spend
    ii. Maybe even help cut costs and increase income!

E. Choosing your new best friend: The Contractor
1. Your relationship with this person/organization is crucial in taking the stress out of planning and construction.
2. Remember: Contractors are people too … also (if you are lucky), experts in their field.
3. Remember: Contractors aren't always right … follow your instincts and insist on good communication. The best way for you to communicate effectively is if you are armed with good information. Do your research!
4. Did I mention that Good Communication is essential?!
5. The BEST way to choose a contractor is by Word of Mouth
6. GET REFERENCES. NO MATTER WHAT!

II. Construction

A. Site Selection

1. One of the most important aspects of a potential arena site is Good Drainage
    i. Usually found in high ground
    ii. Your soil is a good indicator of how quickly water passes
    iii. Just as important: Look for ways (other than rain falling) that water can reach the site. Driveways and hillsides are the usual suspects
    iv. A southern exposure and prevailing winds can help your arena thaw and dry more quickly than a sheltered, northern exposure
2. Your site in relation to Nutrient (Manure) Sensitive Areas
    i. Nutrient management regulations are getting stricter, take care that manure, urine, or your expensive footing don't get washed into the stream flowing past your arena.
    ii. Same goes for wetlands and other watery places.
3. Access!!! Make sure your arena is convenient to get to
    i. Consider proximity to electric, water source, and other existing or planned horse related buildings.
    ii. Make sure it is accessible by large construction equipment (talk to your contractor about requirements).
    iii. If you are building a commercial facility, make sure you allow for enough parking and spectator areas.
4. Earth Moving
    i. Usually the less dirt necessary to move, the better = Lower Cost.
    ii. Unless: The long-term positive attributes of the site (exposure, drainage, high ground) outweigh the positives (Lower Cost).
5. Building in "critical" or protected areas
    i. If you are restricted in building an impervious (something that doesn't drain) surface (indoor arena) on your farm because you fall under the Critical Area law or you are in Ag preservation, consider taking advantage of new sustainable building technology such as Green Roofs. Green Roofs help mitigate storm water run-off, reduce rainfall pollution, save energy, not to mention a green roof is a 40 year roof.

B. Building the most important part of your arena: The Base
    1. The base of your arena is truly the most important part of achieving a successful arena. You wouldn't skimp on the construction of the foundation of your house so don't skimp on the foundation of your arena
    2. Excavation: The process of stripping the topsoil from your arena site
        i. Ask your contractor to remove as many stones as he/she can during this process, this will reduce the likelihood of stones coming up through your base
        ii. Make sure that even this first cut is angled at a slight slope to encourage drainage

C. Material Selection: Crusher run, screenings, stone dust, geo-textile … What it all really means
    1. Crusher Run: A term used in the mining and construction industry used to describe a manufactured (crushed) stone used in making the sub-base of your arena, usually in the ¾" size range
        i. There are a few types of stone that fall under this category, but the best for this purpose is CR-6 because it packs well and doesn't have stones larger than ¾"
    2. Screenings and Stone Dust: One in the same! A smaller gradation of crushed stone used in making the top base layer (above the sub-base). In the MD mining industry known as #10 Screenings.
        i. Granite vs. Limestone: You are best off using granite if it is found in your area. Limestone is a calcium carbonate material that has a tendency to get a slick surface after wetting and rolling. This results in there not being enough friction between the base and the riding surface, causing slippery conditions. If you can only find limestone in your area, be sure to scratch the surface of the base to create enough abrasion so the base and the riding surface "knit" together
    3. Geo-Textile: A woven synthetic drainage fabric used between the sub-base and base to discourage stones from coming up through the base (borrowed from road building technology)

D. Basic Base Construction
    1. After proper excavation a sub-base is laid using CR-6 (¾" stone). The sub-base should follow the slight grade of the

excavated ground to promote drainage. The purpose of a sub-base is to ensure a solid and sinkhole-free base for your arena. The depth of this layer will depend on the condition of your sub-soil. Talk to your contractor about this. Under good soil conditions, 3 – 4 inches is usually adequate.

2. Geo-Textile layer: Somewhat debatable
    i. The use of a geo-textile is a matter of choice. Some maintain that the fabric layer will help keep stones from coming through the base and others say that some rocks will still get through.
    ii. My advice? Look at your existing sub-soil and ask your contractor.
3. After the sub-base material is compacted, 6 – 8" of # 10 screenings (1/4" minus stone dust) is laid following the same grade as before, always making sure to keep drainage in mind.
4. Roll and compact your base material (Don't forget the grade for drainage!). Roll and compact the base material (screenings) several inches at a time (3" is fine) so that the bottom layer does not remain loose.
5. Settling time: Allowing settling time for the base is a matter of necessity (how soon you need to use it) but I would recommend waiting through at least several heavy rain falls so you can see how your base is draining and where any weak spots may be. Waiting through a freeze and a thaw is ideal but not always practical.

III. Choosing a riding surface

A. What is your discipline?
   1. English vs. Western and everything in between
      i. Determine the most important characteristics needed in your footing (stability, cushion, etc.) to help you train in your discipline to the fullest potential

B. Volume of traffic
   1. The amount of traffic you have in your arena and what kind of footing you choose will effect how long it will last
      i. Choosing a footing with synthetic components may help your surface last longer

C. All Sand is not created Equal
   1. Some good, basic information about sand:
      i. The best kind of sand is a sub-angular, naturally occurring, quartzite sand with very minimal amounts passing through the #200 screen. It is hard and long lasting but has some cushion
      ii. Others exist and can be used, but usually require some sort of stabilizing and/or dust control
      iii. Good sand can be hard to track down. Call your local sand companies and ask to see a sieve analysis on the sand they recommend for riding arenas. Make sure very little passes the #200 screen, those particles not only dust causing, but dangerous because they are respirable (not only to you, but to your horse too! Approximately 80% of respiratory illnesses in horses are caused by airborne particles!!)
      iv. A good rule of thumb for almost all disciplines is to start with no more than 2" of sand as your surface. You can always add more and taking it off is expensive and time-consuming

D. All that stuff you can add (the list is almost endless but these are the basics) and why you would need it:
   1. Rubber: Used to add cushion and longevity to a sand based footing. Also thought to speed thawing in the winter due to the thermal properties of dark rubber
      i. Recycled tires
      ii. Virgin rubber
   2. Fiber, natural and synthetic: Used to add stability to the sand and some cushion. Fibers, both synthetic and natural, also

have some water retaining properties. The natural fibers feel wonderful but break down quickly and create dust.

i. Peat moss (natural)
ii. Wood chips or hardwood sawdust (natural)
iii. Leather (natural with chemicals added for curing - I hear it can be slippery)
iv. Felt (synthetic)
v. Recycled carpet fibers/cords (synthetic)
vi. Virgin synthetic fiber (synthetic)
vii. Recycled synthetic fiber (synthetic)

3. Coatings and amendments: Used to inhibit dust and prevent freezing
   i. Petroleum
   ii. Wax
   iii. Mineral Oil
   iv. Magnesium or Calcium chloride

E. A short word on Dust

1. Everyone agrees, dust is not desirable and a pain in the neck. It can also be dangerous however. Please be very careful in exposing yourself and your horse to a dusty arena. Also consider the liability of poor air quality if you are running a commercial facility

IV. Maintenance

A. The real scoop on poop … why you need to clean up after your horse after every ride
    1. It is very simple: when manure breaks down, it turns into Dust

B. Watering
    1. Almost all arenas that are not coated with something listed above will become dusty over time as the footing breaks down
    2. Watering can be done in the following ways:
        i. By hand
        ii. Garden sprinkler
        iii. Sprinkler tank pulled behind tractor or self propelled
        iv. Overhead sprinkler system – this system wets the arena surface most evenly/consistently and is more efficient.

C. Maintenance
    1. Your arena MUST BE DRAGGED
    2. No exceptions. Everyone hates this, but it is a sad fact of life. Dragging after a day of riding can help turn a cheap footing into a star footing. It also helps the footing last longer and perform better. Your horses will thank you.
    3. Drags that people like:
        i. The tr-3 rake
        ii. The Red Master Harrow
        iii. The Reveal 4-in-one
        iv. York rake
        v. The good old section of chain link fence with a railroad tie to weigh it down

V. Having fun!

A. Now you are ready to have a great time planning, building and riding on your new surface! Your horses will be thrilled and you will ride better. Just remember to take care of your arena and it will last a very long time!

B. Enjoy!