SafeArenaFooting
COMMITTEE

# How to Collect an Arena Footing Sample

Thank you for your commitment to better ground!
The most important part of your test is to start with a consistent sample. The directions below can be used to collect a fair sample for testing. As always, call us with any questions or concerns and we will be happy to walk you through it. 877-710-1166 x:1

Items Needed:

- Gallon sized ziplock bag
- Bulb cutter *(Marked at 4 inches)* or other dedicated soil sampler. Can be found at local garden supply store.
- Bucket, 5 gallon
- Sharpie/permanent marker
- Hand trowel *(Small garden spade)* If needed.

1: Make sure your footing (arena) is maintained as if you were getting ready for an event. The idea is that the ground is moist, leveled, and conditioned such that there are no material separations or variations in profile depth. If an indoor arena where the cushion soil is removed and stored, there is a different method for soil sampling from a stockpile (see included directions).

2: After determining the sub-sample location, pack the soil by foot at the sampling location. Then, use a bulb cutter (or a dedicated soil sampler) to push down through your cushion and sub-cushion/pad layer *(to the depth marked at 4 inches),* remove soil sub-sample and collect in a bucket. See note #1. The idea is that an equal volume sub-sample is collected from each location and that an equal amount of soil by depth (an equal amount of 0-2ò soil profile as from the 2-4ò soil, for example). If the cushion is deeper than 4 inches, the total depth of cushion may be sampled but do not vary sampling depth by location unless a shallower depth of cushion is encountered in a particular sampling location. Use the hand shovel for soil collection if needed but use caution to assure equal volume soil collection from each sub-sample site. If the sub-sample soil will not hold within the ôbulb cutterô during removal, it may be necessary to insert the cutter into the soil and then excavate around it and insert hand

shovel under cutter to hold the soil sub-sample within the cutter as it is removed and placed in your sampling bucket.

3: We recommend getting at least 6-8 sub-samples from your arena (up to 20 sub-samples preferred). Gather the sub-samples from random areas in the arena *(Ex: One by the chute, some by the sides, some in the middle)* but in general the sites should represent all of the arena area. For example, do not collect the majority of sub-samples from one end/side of the arena over the other. All the sub-samples are added to the sampling bucket as the sampling process progresses.

4: If you feel you have a specialized issue in an arena, we can test the one area to see if there are any problems with the composition but the sample from this area should be handled separately. This is a separate run from the composite sample and requires the same one-gallon sized sample for the best reading. In general, avoid including sub-samples from localized area of contrasting materials within the overall composite sample. Contact us for further direction.

5: Once you've collected all the sub-samples from your locations, thoroughly mix all the samples together in your bucket to form one composite final sample.

6: Fill a gallon sized zip lock bag with your composite sample and discard any excess soil. Label the sample bag using a permanent marker. Include your sample name (venue), date, and your contact name and number. To protect against spillage during shipping, it is preferable to double bag the sample after labeling.

7. Prepare a submittal/transmittal letter indicating what the sample represents (that it is a rodeo arena), venue name, full contact information including email, and any other pertinent details and include that within the shipping box.

## Send sample(s) to:

## Environmental Technical Services
## Attn: Michael DePew
## 835 Herricksville Rd
## Tekonsha, MI 49092

**NOTE #1 - The depth of your arena should be more than 4 inches in depth. If it is shallow in any subsample location then when collecting the sub-sample do not include any of the base material in it. Base material is usually clay, gravel/stone, concrete, asphalt or some other hard forming material. That base material should not be included in the sample. Testing and composition of base materials may be an important factor but the sampling/testing of the base material should NOT be mixed in with the overlying soil material.**

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# How to Collect a Consistent, Composite Arena Footing Sample from a Soil Stockpile

All samples should be collected as detailed in the following step-by-step procedure.

Assemble the necessary tools for sampling the stockpile. These include a:
- clean 5-gallon bucket,
- rubber mallet,
- shovel,
- Sharpie or other permanent marker,
- 1-gallon zip-lock plastic bags,
- a large, non-permeable plastic tarp,
- a sampling tool, marked at a 2 foot sampling depth.

The sampling tool is made from a 4-foot long piece of 2-inch PVC pipe. To make sampling easier, one end of the pipe can be cut at a 45-degree angle. A PVC "T" can be placed on the other end to make it easier to push the pipe into the sand. A wrap of the sampling tool with duct tape can be used to mark the 2-foot sampling depth.

Collect a minimum of 8 sub-samples to ensure an accurate representation of the pile. Take samples at four equidistant points around the pile, at 1/3 and 2/3 up the face of the pile, for a total of at least eight sub-samples. Most arena-soil stockpiles are 850-1,000 tons in size. If larger soil stockpiles are encountered, the minimum number of sub-sample locations should be increased proportionally.

At each sampling point, dig a hole into the face of the pile to prevent collection of any of the sand from the surface of the pile. Expose an undisturbed face of the pile into which the collection tube can be inserted. When you first dig into the pile, material from above will usually flow down the face into the area you are clearing. Keep digging until the hole becomes stable. The shovel also works very well to expose an undisturbed face. Make a vertical cut down into the face just above the sampling point.

Insert the collection tube into the undisturbed face to a depth of two feet. The tube should be inserted at a slightly upward angle to prevent the sub-sample from falling out when the pipe is

removed. Refresh the mark (or tape) on the collection tube to ensure uniform 2-foot depth insertion. The “T” fitting on the end of the two-inch, PVC pipe makes it easier to push the pipe into the pile. In most cases, the pipe can be pushed in by hand to the proper depth. In “tight” sand, a rubber hammer may be needed to drive the pipe to the 2-foot depth.

Photos courtesy of USGA Green Section

Carefully remove the collection tube from the face of the pile. Empty the sub-sample from the tube into a clean, 5-gallon bucket.

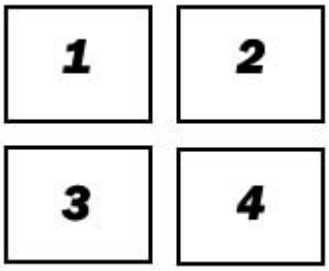
Improper sample collection procedures will result in problems such as from a sample collected incorrectly from the surface of the pile, rather than from within the pile. When this sample is tested, the results will not represent the overall make-up of the stockpile. Samples collected in this manner will be highly inconsistent from test to test since the surface of the stockpile changes rapidly.

Samples collected from the surface of this pile can vary widely from those collected from within the pile. The surface of stockpiles tend to segregate due to wind and rain and gravity. As the finer materials erode, the coarser materials accumulate on the pile surface. Test results of a sample removed from this area would indicate a higher percentage of coarse-materials than actually exists in the pile.

After the eight sub-samples are collected from the arena stockpile, the 5–gallon bucket should be about 1/2 to 2/3 full. Most arena soil stockpiles are 850-1,000 tons. If a stockpile larger than 1000 tons is sampled, the number of samples collected should be increased proportionately. Thus, at least 16 samples should be collected from a 2000-ton pile, for example.

Empty the bucket onto a clean tarp (or other non-permeable surface). Thoroughly mix the samples together by hand. The homogenized sample should now be reduced to approximately 1 gallon, to be sent into the laboratory. This is accomplished by splitting the sample. The sample should be shaped into a square so that it can be divided into quarters.

Divide the sample into equal quarters. Opposite quarters will be removed from the sample and discarded. For example, if quarters 1 and 4 are removed and discarded, quarters 2 and 3 will be recombined and mixed again. Another square is then formed. The process is repeated until the sample is reduced to approximately 1 gallon.




Place the 1-gallon sample into a plastic, zip-lock bag. Label the outside of the bag using a permanent marker. Place the sealed and labeled bag into another plastic bag and seal it (tape seam shut, preferably). This labeling and double-bagging procedure is important to ensure the lab receives the sample intact.

Prepare a submittal/transmittal letter indicating what the sample represents (that it is a rodeo arena) , venue name, full contact information including email, and any other pertinent details and include the letter within the shipping box.