Recommend Approval: Team Leader / Date; Division Chief / Date	Maryland Department of Transportation State Highway Administration Office of Materials Technology MARYLAND STANDARD METHOD OF TESTS	
Approved: Director / Date	**SAMPLING OF SOIL AND BANK RUN MATERIALS FOR APPROVAL OF BORROW SITES**	**MSMT 354**

SCOPE:

This procedure is used to obtain uniform samples of soil or bank run materials from proposed borrow pits.

MATERIALS AND EQUIPMENT:

1. Sample bags
2. 8 oz ointment tins
3. Shovel
4. Geologist pick
5. Sampling cloth, tray, or board
6. 100 ft. measuring tape
7. 6 ft rule
8. Magnifying hand level
9. SHA Forms 27B and 27C

SAMPLING PROCEDURE:

1. Obtain samples to represent the material to be used on the construction project. Record the method of material removal. Use the same method of material removal for the duration of the construction project.
2. Determine sampling locations and submit a sampling schedule for approval.
3. The Engineer, Contractor, certified compaction engineer, and a representative of the Laboratory shall be present when sampling for borrow pit approval.
4. Determine the site limits, depths, type of equipment necessary for working the site, and the number of areas to be sampled.

5. A minimum of five locations will be required for site approval testing.

Note: Sampling less than the required five locations shall be as approved and documented by the Contractor.

6. Additional samples may be required to define the limits of changing materials. The number and location of these samples will be based upon proposed methods of material removal, topography, or visual changes as they occur and shall be as approved.

SAMPLING OPEN FACE PITS - METHOD A

1. Obtain samples from an exposed face.

2. Make a channel cut of the following dimensions in the exposed face for sampling:

a) 4 in. wide, minimum,

b) 2 in. deep, minimum, and

c) As long as necessary to yield the required sample size.

3. Ensure the sample is representative of the full thickness of the layer being sampled.

TEST HOLE - METHOD B

1. When possible, samples shall be taken from the same channel cut used in Method A.

Note: Recommended locations are at the four corners and the center of the site.

2. Test holes shall be considered an "open face."

3. The depth of test holes shall be the bottom limit for the excavation agreed upon.

4. Should unstable conditions exist in the test hole, an alternate method such as a backhoe bucket may be used, as approved.

Note: Any method approved shall expose the hole from the top to the desired final sampling depth allowing each stratum to be sampled individually and recombined as approved by the Engineer.

COMPOSITE STOCKPILE - METHOD C

1. A stockpile plan will be as approved by the Engineer, Project Engineer, and the certified compaction engineer prior to sampling materials for use as Common, Select, Capping, or Modified Borrow. The stockpile plan shall include the following:

a. Location of stockpile,

b. Proposed height and width of stockpile, and

c. Origin of each material to be stockpiled.

2. Construct the stockpile in a manner that ensures uniformity of the stockpile.

3. Use motorized equipment capable of penetrating one-third of the stockpile base towards the center of the pile for sampling. Combining of several increments of the stockpile may be necessary to obtain representative samples.

4. Any additions to the approved stockpile will require further sampling to maintain approval for use.

AUGER SAMPLING - METHOD D

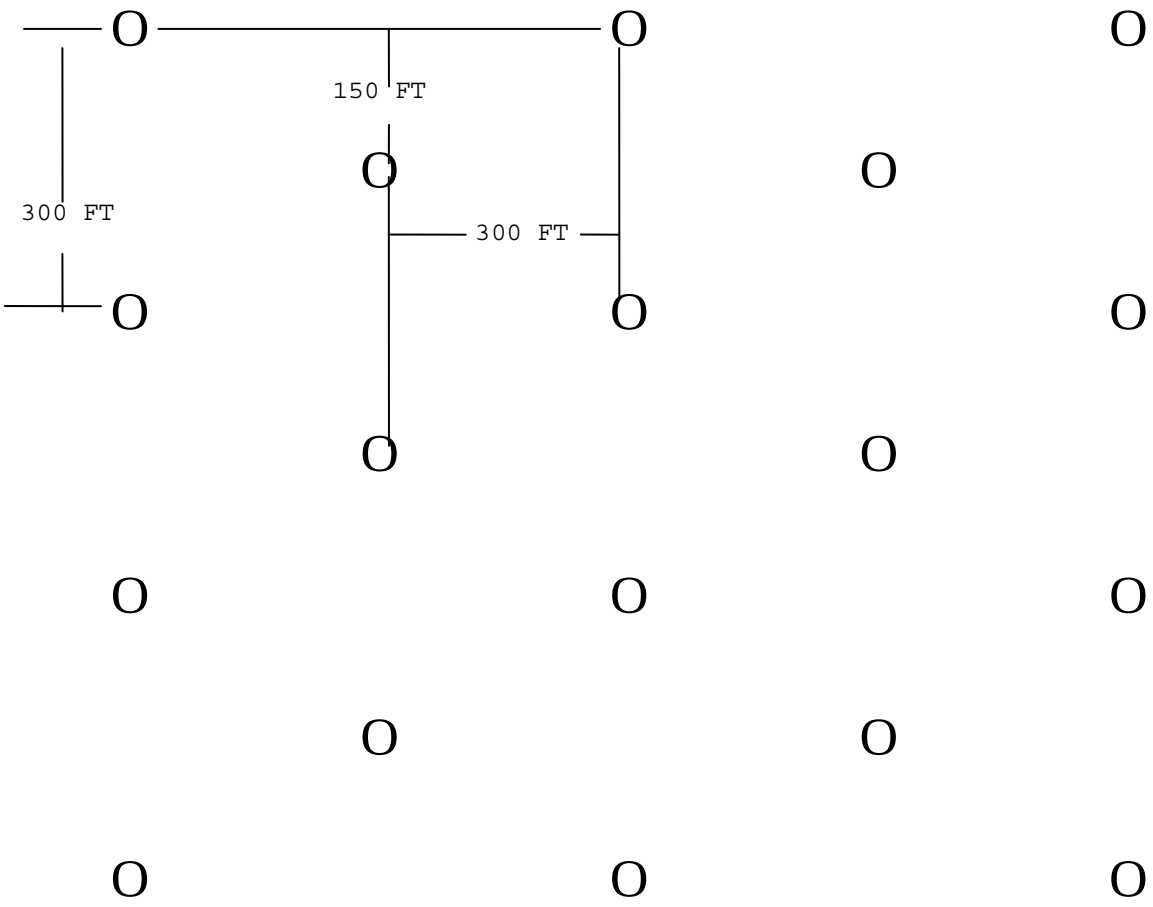
1. Take samples at every five feet or at each soil change, whichever occurs first.

2. Obtain a representative sample for moisture determination and place it in a moisture sampling can. The can shall be sealed to prevent loss of moisture, labeled, and then included with the material represented. Both shall be sent to the laboratory for testing.

3. Drill borings to a depth of 10 ft below the anticipated bottom of the pit. Borings shall be checked for water levels immediately after drilling, covered for 24 hr, checked again, and refilled.

4. Auger borings shall be laid out every 300 ft on a grid pattern with every other line staggered. The following suggested pattern is a minimum boring guideline which shall be increased in erratic subsurface conditions.

SUGGESTED GRID PATTERN


150 FT
300 FT
300 FT