

Procedure Checklist FM 1-R 090 – Sampling of Aggregates

		P	F	N/A
A. Flowing Aggregate Stream (Bins or Belt Discharge)				
1.	Use a container that will catch the entire section of the material as it's discharged, without overflowing.			
2.	Take each increment from the entire cross section of the material discharge stream.			
3.	Obtain a minimum of three approximately equal increments.			
4.	Combine the increments to form a field sample without contaminating or losing any material.			
5.	Ensure that the size of the field sample equals or exceeds the approximate minimum mass needed or stated in Table 1 attached.			
B. Conveyor Belt				
6.	Stop the conveyor belt and insert two templates conforming to the shape of the belt into the aggregate stream.			
7.	Space the templates so the material between will yield an increment of the required mass.			
8.	Carefully scoop the material between the templates into a suitable container.			
9.	Collect the fines with a brush and dustpan and add to the container.			
10.	Obtain a minimum of three approximately equal increments.			
11.	Combine the increments to form a field sample without contaminating or losing any material.			
12.	Ensure that the size of the field sample equals or exceeds the approximate minimum mass needed or stated in Table 1 attached.			
C. Conveyor Belt (Automatic Sampler)				
13.	Sampler removes entire cross section of conveyor belt.			
14.	All fines removed from conveyor belt.			
15.	Entire belt cut entering collection container.			
16.	Obtain a minimum of three approximately equal randomly selected increments.			
17.	Combine increments to make field sample without contaminating or losing any material.			
18.	Ensure that the size of the field sample equals or exceeds the approximate minimum mass need or stated in Table 1 attached.			
D. Stockpiles (Manual Sampling – Board/Shovel or Tube Method)				
	Note: Board and Shovel Method			
19.	Shove a board vertically into a stockpile just above the sampling point.			
20.	Remove the outer layer and sample from the material beneath.			
21.	Take increments from the top third, mid-point, and bottom third of the volume of the stockpile.			
22.	Obtain a minimum of three increments.			
23.	Combine the increments to form a field sample without contaminating or losing any material.			
	Note: Tube Method			
24.	Remove the outer layer.			
25.	Insert the appropriate sampling tube randomly to extract increments from the top third, mid-point, and bottom third of the volume of the stockpile.			
26.	Obtain a minimum of six increments.			
27.	Combine the increments to form a field sample without contaminating or losing any material.			
28.	Ensure that the size of the field sample equals or exceeds the approximate minimum mass needed or stated in Table 1 attached for both board/shovel and tube methods.			
E. Transportation Units (Manual Sampling)				
29.	Excavate a minimum of three trenches at points across the unit that will give an estimate of the characteristics of the load.			
30.	Ensure the trench bottom is level and the trench is 12 inches in both width and depth.			
31.	Obtain an increment by pushing a shovel downward into the material. (Coarse Aggregate)			
32.	Obtain a minimum of three increments from approximately equally spaced points along each			

	trench. (Coarse aggregate)			
33.	Insert the appropriate sampling tube to extract the appropriate number of increments. (Fine Aggregate)			
34.	Combine the increments to form a field sample without contaminating or losing any material.			
35.	Ensure that the size of the field sample equals or exceeds the approximate minimum mass needed or stated in Table 1.			
F. Power Equipment (generally a rubber wheeled front end loader)				
36.	Remove the material from the bottom of the stockpile, across the entire cross-sectional face of the stockpile.			
37.	Production shall not be occurring on the face during sampling.			
38.	The loader shall operate in a direction perpendicular (90 degrees) of the way the stockpile was created.			
39.	The face shall be opened as many times as required to make material cascade from the top to bottom of the stockpile.			
40.	With the bucket scooped upwards parallel to the slope.			
41.	One loader bucket of material shall be collected from the middle of the face.			
42.	The bucket shall be gently lowered to about 3 to 4 feet above the surface and the material allowed to slowly roll out with a downward tilt of the bucket.			
43.	The mini stockpile is then back dragged across the upper ½ to ⅓ of the mini stockpile, leaving it at least 18 inches high, to expose the center mass to be sampled.			
44.	Samples shall be taken across the flattened stockpile along the original center line, not closer than 1 foot from the edges, taken by pushing a square tipped shovel inserted vertically to its full depth in at least 3 locations in the flattened stockpile.			
45.	Repeat for 2 more mini stockpiles.			
46.	Composite material from the 3 mini stockpiles to form a sample without contaminating or losing any material.			

Table 1: Size of Samples	
Nominal Maximum Size of Aggregates	Approximate Minimum Mass of Field Samples (lbs.)
Fine Aggregate	
No. 8	25
No. 4	25
Coarse Aggregate	
⅜ in.	25
½ in.	35
¾ in.	55
1 in.	110
1-½ in.	165
2 in.	220
2-½ in.	275
3 in.	330
3-½ in.	385

Remarks: Comparison Criteria: N/A

Date: _____ Technician: _____ IA Observer: _____

Technician's E-mail Address: _____

Employer's/ Supervisor's E-mail Address: _____