

STOCKPILED MATERIAL

Untreated materials

SAMPLING METHOD MB1

SAMPLING OF STOCKPILES

1 SCOPE

This method describes the procedure to be followed when stockpiles are sampled (see 6.1). The stockpiles may consist of:

Natural gravel, soil or sand;
Crushed rock for base or subbase;
Screened-out crusher dust for binder,
fine aggregate for concrete or fine
aggregate for bituminous mixes;
Crushed single-sized aggregate for
bituminous or concrete work.

bituminous mixes
Single-sized 25 kg
coarse aggregate
for concrete mixes
and bituminous
surfacing

2 APPARATUS

- 2.1 Shovels.
- 2.2 Picks.
- 2.3 A mechanical loader-digger (if available).
- 2.4 Suitable sample bags (or other containers).
- 2.5 Suitable canvas sheets.
- 2.6 A riffler with 25 mm openings and six matching pans.
- 2.7 A 19 mm sieve with a recommended diameter of 450 mm.
- 2.8 A basin with a diameter of approximately 500 mm.

3 SAMPLE SIZE

The sample size will depend on the proposed use of the material and the tests which have to be carried out on it. (See paragraph 2 of Chapter 6.) The following tables give an indication of the minimum secondary sample sizes for every type of material. (See note 6.3.)

Proposed use	Mass
Pavement and formation layers (Gravels, soils and crushed stone)	Gradings and constants: 10 kg California Bearing Ratio: 60 kg
Fine aggregate for concrete and	20 kg

4 METHOD

4.1 Sampling while stockpile is being formed by the off-loading of material

Select one or two positions on the consolidated surface of every layer of the stockpile at random while the pile is being formed.

Make a vertical test hole through the layer (or as deep as is practically possible) with the pick and shovel. Place a canvas sheet in the bottom of the hole and cut an groove in the side of the hole from top to bottom, letting this material fall onto the canvas sheet. Gather a sufficient quantity of material by cutting successive grooves, frequently raising the canvas sheet from the hole and tipping its contents onto another canvas sheet on the surface. Mix the material on the canvas sheet and divide it, by means of the riffler and the quartering method (refer to paragraph 1 of Chapter 7 and Methods MD1 and MD2), into the required size so that each sample bag or container contains a representative sample of the material taken from the test hole.

4.1 Sampling from an already completed stockpile

Select at least twelve sampling positions in a random manner. (See 6.2) Approximately half the positions may be on top of the stockpile if its surface is fairly large. (Also see paragraph 2 of Chapter 6.)

4.2.1 **Sampling with a mechanical loader-digger**

4.2.1.1 **From the sides of a stockpile**

Scooping from the sides of the stockpile from the bottom towards the top, fill the bucket of the loader-digger and deposit the material on a clean hard surface – the flat steel back of a truck or a hard clean ground surface are suitable. Mix the material thoroughly with the spade and quarter it out into smaller equal parts using the quartering method (ref to Method MD 2) until a quantity approximately twice the size is obtained. (See note 6.2)

Deposit this material on a canvas sheet, mix it thoroughly again and further divide it with the aid of the riffler (see Method MD1) until the desired sample, consisting of one or more bags (or containers), each representative of the sample, has been obtained.

4.2.1.2 **From the top of the stockpile**

Use the loader-digger to make a hole approximately 2 m deep. (See note 6.2) Now scoop a load of material from the side of the hole, working from the bottom to the top, and deposit it in the back of a truck. Mix and divide the sample as described in paragraph 4.2.1.1 above.

4.2.2 **Sampling with pick and shovel**

4.2.2.1 **From the sides of a stockpile**

Using shovels, dig a groove from the top to the bottom of the stockpile.

(See note 6.2) Remove all the material that has collected at the bottom of the groove as a result of the digging. Place a canvas sheet of suitable size at the bottom of the groove and using picks and shovels loosen a uniform thickness of material down the full length of the groove. Throw this material onto a canvas sheet, mix it thoroughly and quarter it as described in paragraph 4.2.1.1 above.

4.2.2.2 **From the top of the stockpile**

Dig a vertical test hole with a pick and shovel, preferably 2 m deep (or as deep as practically possible). (See note 6.2.) Place a canvas sheet in the bottom of the hole and cut a uniform groove into the hole from the top to the bottom so that the material falls onto the sheet, or throw it onto the sheet. Continue with this method until you have enough material, raising the canvas sheet as often as necessary and depositing the material on another canvas sheet on the surface of the stockpile. Now mix thoroughly all the material, raising the canvas sheet as often as necessary and depositing the material on another canvas sheet on the surface of the stockpile. Now mix thoroughly all the material deposited on the canvas sheet on the surface and quarter it as described in 4.2.1.1 above.

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REPORTING

Samples taken from stockpile are often tested in field laboratories. In such cases a proper record must be kept of the sample number, date of sampling, position in the stockpile, description of the material, depth of test hole, etc.

When samples from a stockpile are sent to a central laboratory, they must be sent under cover of a properly composed report in which full details of the stockpile and samples are given. Important particulars about the sample are the sample number, the position at which sampled, depths between which the sample was taken (right of the side from which it was taken), description of the material of which the sample consists, number and type of bags (or containers) in which the samples is contained and the proposed use of the material. (See also Paragraph 4 of Chapter 7.)

A sketch of the stockpile showing the positions of the sampling points at which the various samples were taken must be included with the report.

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- 6.1 Sampling from a stockpile should, if at all possible, be done while the stockpile is being formed. Whenever a layer has been completed sampling points should be taken by making test holes in the layer and taking samples from them. However, stockpiles are often scraped together in natural material with bulldozers, in which case it is better to wait until the stockpile has been completed before taking samples.
- 6.2 The number of samples will depend on the size of the stockpile. At least four samples must be taken from each stockpile, but if the pile is greater than

4 000 m, one sample must be taken every 1 000 m, i.e.
 for 0-4 000 m- 4 samples
 for 5 000 m – 5 samples
 for 7 000 m – 7 samples.

The primary sample should consist of at least 300 kg for coarse and 50 kg for fine material. However, since it is impractical to transport such large quantities, the material is immediately divided up into the secondary sample size as shown in paragraph 3. The tertiary sample size is determined by the test method.

NOTES