

STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 1289.1.4.2—1998

Methods of testing soils for engineering purposes

Method 1.4.2: Sampling and preparation of soils—Selection of sampling or test sites—
Stratified random number method

RECONFIRMATION NOTICE

Technical Committee CE-009 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 13 June 2013.

The following are represented on Technical Committee CE-009:

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Methods of testing soils for engineering purposes

Method 1.4.2: Sampling and preparation of soils — Selection of sampling or test sites — Stratified random number method

1 SCOPE This Standard sets out the method for selecting the location of test or sampling sites where a test site or stockpile is divided into strata from which individual samples or subsamples are to be taken. The method uses random numbers obtained from a random number table (see Table 1) or generated using a suitable electronic calculator or algorithm.

The method is based on ASTM D 3665.

2 REFERENCED DOCUMENTS The following document is referred to in this Standard:

ASTM

D 3665 Standard practice for random sampling of construction materials

3 PROCEDURE

3.1 Selection of a random number A random number shall be selected using either of the following procedures:

(a) *Using Table 1* The procedure shall be as follows:

- (i) Obtain a row number (R) corresponding to the first two digits of a number found by blindly pointing to Table 1. Either page of the Table may be used but alternate between successive uses.

NOTE: The digits 0.001 to 0.009 are invalid for choosing a row number. The number 1.000 is used for row number 100.

- (ii) Obtain a column number (C) corresponding to the first digit of a number found by blindly pointing a second time to the Table.
- (iii) Obtain a random number (r) corresponding to the intersection of Row (R) and Column (C) in the Table.

Example:

First number selected is 0.548 which gives Row (R) 54

Second number selected is 0.457 which gives Column (C) 4

Row 54 Column 4 gives $r = 0.223$

- (b) *Using a calculator* A random number shall be generated using a suitable calculator or computer by following the manufacturer's instructions. Where a starting (seed) value is required, the value shall be varied between test areas or lots.

3.2 Dividing the sampling or test site into strata

The procedure shall be as follows:

- (a) Determine and record the boundaries of the test area or stockpile to be assessed and any areas excluded within the boundaries.

NOTE: Areas at the edges of construction or near a lateral construction joint may be excluded from the test area.

- (b) Establish the length of the test area or stockpile (L).
- (c) Determine the number of sites (N) to be tested or sampled.
- (d) Divide length of the area or stockpile to be sampled into N equal sections (strata) of length (S), as follows:

$$S = \frac{L}{N}$$

where

S = length of each stratum

L = total length of area or stockpile to be tested

N = number of sampling or test sites in the area or stockpile to be sampled.

Determine the start distance of each section of stratum from one end of the area or stockpile to be tested using distances $0, S, 2S, 3S \dots (N-1)S$.

- (e) If the width of the test area or stockpile is to be stratified, repeat Steps (a) to (d) to determine the start of each stratum by substituting the width (W) of the test area or stockpile for the length.

3.3 Selection of test and sampling sites

3.3.1 Longitudinal location

The procedure shall be as follows:

- (a) Select a random number (r_l) in accordance with Clause 3.1.
- (b) Multiply r_l by S to obtain the distance from the longitudinal start of the stratum test area. Determine the distance $r_l S$ from the start of the section as determined in Clause 3.2(d).

3.3.2 Lateral location

3.3.2.1 *Where the width of the test area or stockpile has been stratified* The same edge should be used as datum for measurement of the lateral distances for each site. The procedure shall be as follows:

- (a) Select a random number (r_w) in accordance with Clause 3.1.
- (b) Multiply r_w by W to obtain the lateral distance from the lateral start of the test area or stockpile. Measure the distance $r_w W$ from the start as determined in Clause 3.2(e).

3.3.2.2 *Where the width of the test area or stockpile has not been stratified* The same edge should be used as datum for measurement of the lateral distances for each site. The procedure shall be as follows:

- (a) At each chainage selected in Clause 3.3.1(b) measure the width (W_n) of the test area, excluding distances from the edge of construction or stockpile.
- (b) Select a random number (r_w) in accordance with Clause 3.1.
- (c) Multiply r_w by W_n to obtain the lateral distance from the lateral start of the test area or stockpile. Locate the lateral position of the selected site.

3.4 Location of sampling or test site The intersection of the paired results of Clauses 3.3.1 and 3.3.2 shall define the locations of the sampling or test sites.