

Notice to facilities regarding depth of probe when testing to AS 1289.5.8.1 using a nuclear gauge

15 October 2021

Dear Authorised Representative

**Re: AS 1289.5.8.1 Methods of testing soils for engineering purposes
Method 5.8.1: Soil compaction and density tests – Determination of field density and field moisture content of a soil using a nuclear surface moisture – Density gauge – Direct transmission mode**

When testing to AS 1289.5.8.1 using a nuclear gauge, it is important that the depth of probe is placed to the full depth of compacted layer of soil being tested as detailed in Clause 6 (c) and (e) of the method, i.e. the probe needs to be within the layer without entering the lower layer. In general this means that the probe should be placed no more than 25 mm less than the compacted layer depth.

Failure to place the probe as detailed in the method will mean that part of the layer is not tested and the risk that this part of the layer is poorly compacted will increase the chance of premature failure of the construction.

In number of recent cases, the depth of the probe has been reported well outside this 25 mm difference e.g. tests at 150 mm for a 300 mm layer.

In cases where the un-compacted layer depth is known only or the compacted depth is unknown, the testing facility should drill a small core hole about 1 m away from where the probe is to be inserted into the soil to ascertain the depth of layer which is required to be reported in clause 8 (f).

Generally an un-compacted layer of 300 mm of fill will compact to about 200 mm but this would need to be confirmed for each project.

Due to the surface preparation of the constructed layer prior to testing, a small amount of material is removed from the top of the layer and this soil needs to be taken into account when determining the depth of layer.

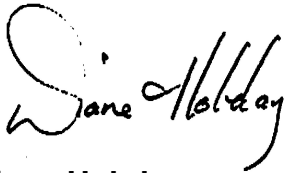
In other cases the facility has not had the nuclear gauge calibrated at sufficient probe depths to ensure that the method can be followed, e.g. a nuclear gauge calibrated at probe depths of 100, 150 and 300 mm would not be suitable for layer depths of 250 or 275 mm.

When reporting the probe depth and layer depth, the facility needs to be specific as to what has been tested and what may be excluded.

A statement such as: “the depth of testing was requested by the customer”, or “density and moisture ratio results relate only to the soil to the depth of test and not to the full depth of the layer”, or similar, needs to be included on reports so that all information necessary for the interpretation of the results (ISO/IEC 17025 7.8.1.2) is available to the customer.

A simple request by a contractor to test at a specific depth usually does not ensure the method has been followed, and is not sufficient reason to vary the test without explicitly indicating the deviation on the report.

Yours sincerely

A handwritten signature in black ink that reads "Diane Hobday". The signature is written in a cursive style with a large initial 'D'.

Diane Hobday

Sector Manager - Materials, Assets & Products