Texture Depth Test
The Sand Patch Method

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Purpose

This field test method is suitable to measure the pavement surface texture depth, which may be used to determine the pavement skid resistance capability and the suitability of paving materials or finishing techniques.

Apparatus

- **Sand**: either natural silica sand (Ottawa Sand) or solid glass sand. The sand should be graded to have a minimum of 90% by weight passing a 250 μm **(No. 60)** sieve and retained on an 180 μm **(No. 80) sieve**.
- **Sand Container**: cylindrical metal or plastic container with a minimum internal volume of **25000** mm3.
- **Sand Spreading Tool**: A flat, disc approximately (25 mm) thick and (**60 to 75**) mm in diameter.
- **Brushes**: stiff wire brush and soft bristle brush.
- **Scale**: a 30 cm ruler with 1mm division.
- **Wind Screen**: A suitable open frame with an inside width and length equal to approximately 40 cm and a height of about 5 cm. It is used to protect the material sample from the wind and turbulence created by traffic.
- **Balance**.

Apparatus

Procedure

Test Area

- Inspect the pavement surface and select **a dry, homogeneous** area that contains no unique, localized features such as cracks and joints.
- Thoroughly clean the surface using the **stiff wire brush** first and subsequently the **soft bristle brush** to remove any residue, debris, or loosely bonded aggregate particles from the surface.
- Position the portable wind screen around the surface test area.

Procedure

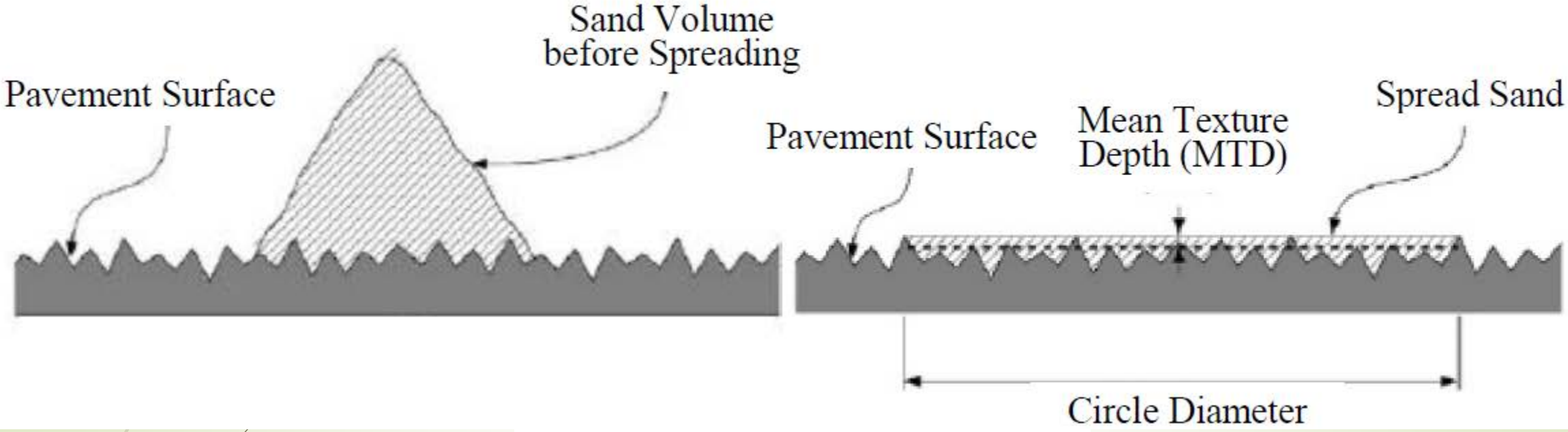
Material Sample

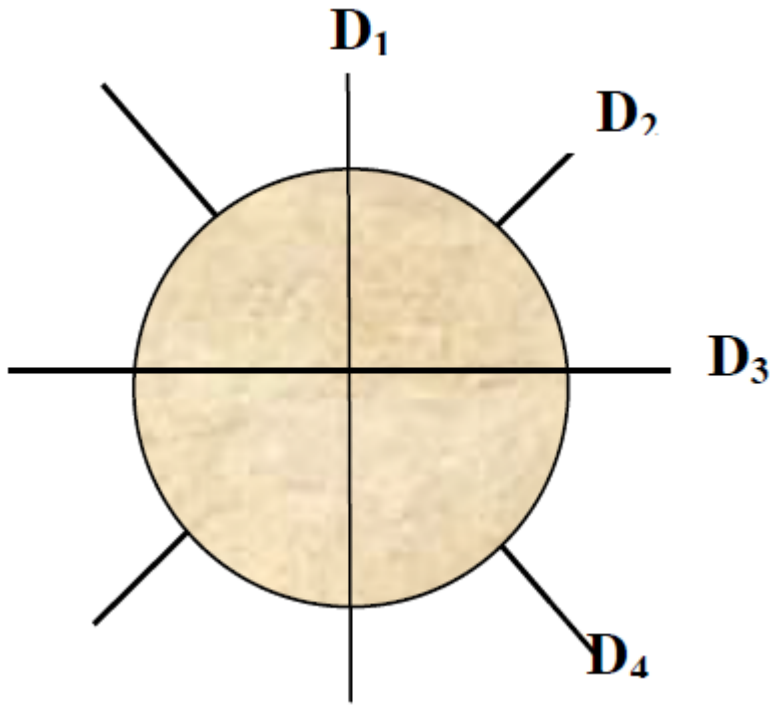
- Fill the (**25000 mm3**) cylinder with dry material (sand) and gently tap the base of the cylinder several times on a rigid surface. Add more
- material to fill the cylinder to the top, and level with a straightedge.
- If a laboratory balance is available, determine the mass of material in the cylinder and use it for each measurement.

Procedure

Test Measurements

- Pour the sand material onto the cleaned surface within the area protected by the wind screen.
- Carefully spread the material into a circular patch with the spreading tool, filling the surface voids flush with the aggregate particle tips.
- Measure and record the diameter of the circular area covered by the sand patch at a minimum of **four equally spaced locations** around the sample circumference.
- Compute and record the average diameter.


Sand Volume
before Spreading
Pavement Surface
Pavement Surface
Mean Texture
Depth (MTD)
Spread Sand
Circle Diameter


D1
D2
D3
D4

Procedure

Number of Test Measurements

- The same operation should be performed at least **four, randomly-spaced measurements** of average texture depth on a given test pavement surface type..

Calculation

- Calculate the mean texture depth (*MTD*) using the following:

$$MTD = \frac{4V}{\pi D^2}$$

- *MTD:* mean texture depth of pavement, **mm**
- *V*: sample volume, **mm3**
- *D:* average diameter of the area covered by the sand, **mm**.

Data Sheet for the Texture Depth Test						
Location:				Date:		
Pavement age*:						
Material Preparation						
Material (sand) volume, mm^3:						
Number of test measurements:						
Test						
Test No.	D1 (mm)	D2 (mm)	D3 (mm)	D4 (mm)	D $\sum D_i/4$	Texture Depth
1						
2						
3						
4						
Mean Texture Depth						
MTD, mm:						

* *if available*

References

- ASTM E 965, ". Standard Test Method for Measuring Pavement Macrotexture Depth Using a Volumetric Technique".