

## DETERMINING THE STRENGTH OF CORE SPECIMENS

Core samples may be extracted from the full thickness of the layer and tested for ITS values. Due to the relatively low strength of a BSM, 150 mm diameter cores are preferable to the 100mm diameter cores normally extracted from HMA. Cores cannot be successfully extracted until the BSM has developed sufficient strength and the delay period is dictated by the rate of moisture loss from the material which is primarily a function of weather conditions and layer thickness. When conditions are warm and dry, cores can usually be extracted from a 150 mm thick layer of BSM-foam after 14 days. The delay period for BSM-emulsion is further influenced by the stability of the bitumen emulsion and delays of 30 days are normal.

### 1. EXTRACTING CORE SAMPLES

The core barrel used to extract samples of BSM must be in a good condition. The amount of water added whilst drilling should be kept to an absolute minimum and the rate of penetration kept sufficiently low to prevent erosion and damage. After extraction, core samples must be wrapped individually in a soft cloth and carefully packed for transporting to the laboratory.

### 2. CUTTING CORE SPECIMENS

Use a rotary saw fitted with a large diameter diamond-tipped blade to cut 63 mm high specimens from the portion of the core that suffered least damage during extraction and handling. Where possible, more than one specimen should be cut from each core sample.

### 3. CURING THE CORE SPECIMENS

Cure the specimens in a forced-draft oven for 72 hours at 40°C.

### 4. DETERMINATION OF BULK DENSITY

After curing, leave the specimens overnight in an air cabinet at 25°C before testing. Then, for each specimen:

- Measure the height at four evenly-spaced places around the circumference and calculate the average height, h (cm);
- Measure the diameter, d (cm); and
- Determine the mass by weighing, M (g)

Calculate the bulk density of each specimen using the following formula:

$$BD = \frac{4 \times M}{(\pi \times d^2 \times h)} \times 1000$$

Where      BD = bulk density (kg/m<sup>3</sup>)  
              h = height of specimen (cm)  
              M = mass of specimen (g)  
              d = diameter of specimen (cm)

Exclude from testing any specimen whose bulk density differs from the mean bulk density of the batch (six specimens) by more than 50 kg/m<sup>3</sup>. If more than one specimen differs from the mean bulk density by more than 50 kg/m<sup>3</sup>, abandon any further testing and start again with a fresh sample.

## 5. DETERMINATION OF THE INDIRECT TENSILE STRENGTH (ITS)

Follow the procedures described under Section D4.6 above for testing the core specimens to determine the  $ITS_{\text{DRY}}$  and  $ITS_{\text{SOAKED}}$  values and the resulting TSR value. These values are then used to determine whether the material has met the minimum specified requirements.

**Note.** Where the ITS results for specimens are in conflict with those obtained from core specimens, the results for the core specimens should be taken as being the correct values.