Measurement of Skid Resistance

Lab Test Reference 601
Test Method Reference
TRRL Road Note 27

Principal Apparatus:

Stanley Skid Resistance Tester - Lab. Invent No. xxx
Electronic Thermometer – xxx

1. Preliminaries

1.1 Check that the calibration plate on the skid tester and the certificates on the thermometer are valid.

1.2 Obtain worksheet 601 from Cabinet A in the soils laboratory.

1.3 Carry out on site calibration procedure to zero the pointer as follows:

(i) Set the base level by means of the spirit level and the three levelling screws on the base-frame.

(ii) Raise the head so that the pendulum arm swings clear of the surface. Movement of the head of the tester, carrying the swinging arm, graduated scale, pointer, and release mechanism, is controlled by a rack and pinion on the rear of the vertical column. After unclamping the locking knob A at the rear of the column, the head may be raised or lowered by turning either of the knobs B/B[1]. When the required height is obtained the head unit must be locked in position again by clamping knob A.

(iii) Check the zero setting. This is done by first raising the swinging arm to horizontal release position, on the right-hand side of the apparatus. In this position it is automatically locked in the release catch. The pointer is then brought round to its stop in line with the pendulum arm. The pendulum arm is released by pressing button C. The pointer is carried with the pendulum arm on the forward swing only. Catch the pendulum arm on its return swing, and note the pointer reading. Return the arm to the release position. Correct the zero setting as necessary by adjustment of the friction rings E*. If the pointer has swung past the zero position, rings E are screwed up a little more tightly. If it has not reached zero the rings should be unscrewed a little.

(iv) With the pendulum arm free, and hanging vertically, place the spacer, which will be found attached to a chain on the base of the vertical column, under the lifting-handle setting-screw to raise the slider. Lower the head of the tester using knobs A and B so that the slider just touches the road surface, and clamp in position with knob A. REMOVE THE SPACER.

(v) Check the sliding length of the rubber slider over the surface under test, BY GENTLY LOWERING THE PENDULUM ARM until the slider just touches the surface first on one side and then on the other side of the vertical; the sliding length is the distance between the two points where the sliding edge of the rubber touches the test surface. (To present undue wear of the slider when moving the pendulum arm through the arc of contact, the slider should be raised off the road surface by means of the lifting handle.) If necessary, adjust to the correct length by raising or lowering the head slightly. When the apparatus is set correctly, the sliding length should be between 125 and 127 mm; on the scale provided, the outer marks are 127 mm apart and the inner ones each indicate the 2mm tolerance allowed.

(vi) Place pendulum arm in its release position. The apparatus is now set ready for operation.

*This adjustment is necessary as the tester is used under different temperature conditions and in windy conditions; sufficient adjustment has been allowed to cover all normal ranges of temperature encountered in Great Britain, but some difficulty may be experienced in correcting to zero in very high winds - it may be necessary to operate the tester with a positive error and subtract the error from the mean value.

2. Standard Test Method (Wet Conditions)

2.1 Wet the road surface and slider, ensuring that the road surface is free from loose grit.

2.2 Bring the pointer round to its stop. Release the pendulum arm by pressing button C AND CATCH IT ON THE RETURN SWING, BEFORE THE SLIDER STRIKES THE ROAD SURFACE. Note the reading indicated by the pointer. (N.B. if the slider is not wetted as well as the road surface, the reading obtained on this first swing should be neglected.

2.3 Return the arm and pointer to the release position, keeping the slider clear of the road surface in this operation by means of the lifting handle. Repeat swings, spreading the water over the contact area with the hand or a brush between each swing (this is particularly important on smooth surfaces). Record the mean of five successive readings, provided they do not differ by more than three units. If the range is greater than this, repeat swings until three successive readings are constant; record this value.

2.4 Raise the head of the tester so that it swings clear of the surface again and check the free swing for zero error.

3. Procedure when Testing Road Surfaces

3.1 Inspect the road and choose the section to be tested.

3.2 Set the apparatus on the road surface in the track chosen to be tested, so that normally the slider swings in the direction of the traffic. On surfaces bearing a regular pattern, such as ridged or brushed concrete, tests should be made with the slider operating at 80° to the ridges. Take the mean of five readings, as above, at each of five locations in the test track (usually the nearside wheel-track) spaced at approximately 5 to 10m. intervals along the length under test. The mean of these readings give a representative value of the skidding resistance of the road.

3.3 The slipperiness of some roads varies considerably across the width of the road and sometimes the crown of the road is the most slippery part. Where this is suspected, tests should also be made on the crown of the road.

3.4 The temperature of the water lying on the road immediately after test should be recorded.

3.5 Measurements should now be corrected to 20°C by using the following formula:-

$$\frac{SRV_t}{SRV_{20}} = 0.548 + \frac{44.69}{t + 80}$$

SRV_t = measured value t - temp. of road