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Load Transfer Efficiency (LTE) of Joints

The LTE and deflection testing is used as a simple means of determining routine maintenance needs, eg stitching or even retrofitting of dowels. Deflection testing using the Falling Weight Deflectometer (FWD) can evaluate the LTE as well as loss of support under the slab.

Occasionally there will be the need to test or prove to the Client the structural capacity of joints in concrete pavements. This is done by measuring the deflection on the loaded and unloaded side of the joint or crack to determine the LTE. The assessment is from the simple formula:

$$\mathbf{LTE = d_u/d_l \times 100}$$

Where LTE = the load transfer effectiveness as percent
d_u = deflection on the unloaded side of the joint or crack in mm
d_l = deflection on the loaded side of the joint or crack in mm

A general recommendation is that testing should not be carried out once the ambient air temperature is above 27ºC or below 16ºC. Above 27ºC the LTE is generally over 90% for temperature expanded concrete pavement.

It is accepted that if the LTE for a joint or crack is **<70%,** stitching will be required or even dowel retrofitting considered.