

## REPORT ON EXPERIMENTS CARRIED OUT ON CONCRETE SLEEPERS AT ABINGTON

Detailed experimental work has been carried out at a site on the West Coast Main Line where concrete sleeper cracking is a severe problem. It has been found that high impact loads from wheel irregularities could cause strains sufficient to crack sleepers, and that the distribution of support between and across sleepers affects the level of strain produced. The stiffness of the rail pad is also a factor.

The number of wheels likely to cause damage is very small (<0.1%) and it is suggested that positive measures be taken to detect and remove such wheelsets as a matter of policy. The work also supports the view that a repacking and rail-strengthening exercise would alleviate the damage, and that the introduction of softer railpads would give a further small benefit. Other work, on the fatigue behaviour of sleepers, has not yet shown any indication of a catastrophic rate of crack propagation.

It is suggested that by eliminating the worst wheel defects and improving the distribution of load between sleepers and their support conditions where possible, the wholesale replacement of sleepers on the West Coast Main Line can be avoided.