



TMC – Tinni Management Consulting

PAVEMENT INFORMATION NOTE

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ACCELERATED TRAFFICKING OF CONCRETE PAVEMENTS

A number of engineers have asked the question as to what could be the minimum concrete strength before a pavement can be opened to traffic. I have been suggesting 17 MPa. I now have extracted further information from the US Federal Highway Administration indicating that the strength may even be lower. The following actual project information may be handy as future reference.

1 I – 75 in Georgia (Peach, Crawford, Bibb Counties) rehabilitation in 2003.

The outer lane was removed and replaced with 250 mm of PCP. The Specification required a minimum of 4 hours curing time before opening to traffic. The concrete was designed as 24.1 MPa in 3 days. This gave 17.2 MPa in 24 hours and between 8.3 and 10.3 MPa in 4 hours.

2 I – 5 James to Olive rehabilitation in 2005

The existing pavement was removed, subgrade regraded, 75 mm of AC placed on the subgrade, followed by 330 mm of PCP (dowelled). The strength of concrete for opening to traffic was specified as 17.2 MPa.

3 I – 75 in Georgia (Cobb and Cherokee Counties) reconstructed in 2007

146 lane km. 300 mm of existing ac was milled, leaving about 75 mm in place. A new 300 mm PCP was then placed. The concrete strength requirement was 17.2 MPa in 24 hours, but the specification allowed traffic on the pavement after 4 hours of curing. It is silent on the strength to be achieved.

It seems that 17.2 MPa is the strength requirement for 24 hours, but from the above it would appear that reaching 8 MPa may be sufficient for opening a pavement to traffic. Where this may be an issue, a controlled testing programme should be instigated to accurately plot the strength gain curves for various 28 day mixes.