

Use of fast set concrete for concrete pavement maintenance work

John Figueroa, Director, John Figueroa Consulting

ABSTRACT

The advent of the new generation of volumetric concrete mixers, in conjunction with the availability of calcium sulfoaluminate cements, has transformed concrete pavement maintenance practice around the world, and especially in the United States, Canada and South Africa. In NSW, there is a history of 8 years' experience in roads, airports and industrial pavements. Fresh fast set concrete produced at the location of placement is advantageous because there are no haul times or transport delays that can affect the loss of moisture, consistency and workability of concrete.

Fast set concrete using calcium sulfoaluminate cement with a set retarding admixture has demonstrated to be a stable material, with little or no long-term shrinkage, cracking or warping. This stability can be noted at both early age and at approximately 2 years. The addition of a set retarding admixture decreases the porosity of the cement paste, which can be attributed to the better fluidity of the concrete.

Customised test procedures that reflect the nature of fast set concrete are described in this paper. In addition, this paper provides a review of existing volumetric proportioning specifications and recommend improvements for potential implementation into the NSW concrete pavement specification for new construction.