Steel fibre concrete pavements - thinner and more durable

Dr Tian Ng, Engineering Manager, BOSFA

ABSTRACT

Steel fibre reinforced concrete (SFRC) has been widely used for pavement construction. The conventional pavement design methodology, and that adopted by the Australian pavement design guidelines, are generally based on elastic theory. The addition of steel fibres to concrete enhances the post crack tensile strength and provides significant ductility. Consequently, the use of elastic theory for designing SFRC pavement will be overly conservative and non-economical. In June 2018, the revised Australian Standard AS 3600 was released. The revised standard now has included the design provisions for SFRC, including analysis and design provision for SFRC pavement. SFRC pavement can be designed using a plastic method of analysis. This paper outlines the design methodology of SFRC pavement and how to specify steel fibres in order to guarantee a minimum level of quality and performance. It also provides a review on the durability of SFRC. The conditions of SFRC pavements constructed some 20 years ago in Australia are also presented herein.