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Comparative Study of Compressive Strength of Triangular Polyester Fiber with Fly Ash Roller Compacted Concrete Using Ultrasonic Pulse Velocity Method

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Abstract : This paper presents the experimental investigation results of Ultrasonic Pulse Velocity (UPV) tests conducted on roller compacted concrete pavement (RCCP) material containing Class F fly ash of as mineral admixture and triangular polyester fiber as a secondary reinforcement. The each mix design series fly ash content is varied from 0% to 45 % and triangular polyester fiber 0% to 0.75% by volume fraction. In each series and for different ages of curing (i.e. 7, 28 and 90 days) forty-eight cube specimens are cast and tested for compressive strength and UPV. The UPV of fly ash was found to be lower for all mixtures at 7 days in comparison with control mix concrete. But at 28, 56 days and 90 days the UPV were significantly improved for all the mixes. Relationships between compressive strength of RCCP and UPV and Dynamic Elastic Modulus are proposed for all series mixes.

Keywords : compressive strength, dynamic elastic modulus, fly ash, fiber, roller compacted concrete, ultrasonic pulse velocity
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