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Characterization of Cement Concrete Pavement

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Abstract : The present experimental investigation deals with the quality performance analysis of cement concrete with 0, 15 and 25% fly ash and 0, 0.2, 0.4 and 0.6% of polypropylene fibers by weight of cement. The various test parameters like workability, unit weight, compressive strength, flexural strength, split tensile strength and abrasion resistance are detailed in the analysis. The compressive strength of M40 grade concrete attains higher value by the replacement of cement by 15% fly ash and at 0.4% PP after 28 and 56 days of curing. Higher flexural strength of concrete was observed by the replacement of cement by 15% fly ash with 0.2% PP after 28 and 56 days of curing. Similarly, split tensile strength value also increases and attains higher value by the replacement of cement by 15% fly ash with 0.4% PP after 28 and 56 days of curing. The percentage of wear gets reduced to 30 to 33% by the addition of fibers at 0.2%, 0.4% and 0.6% in cement concrete replaced by 15 and 25% fly ash. Hence, it is found that the pavement thickness gets reduced up to 20% when compared with plain concrete slab by the 15% fly ash treated with 0.2% PP fibers and also reduced up to 27% of surface course cost.

Keywords : cement, fly ash, polypropylene fiber, pavement design, cost analysis
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