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TITLE OF PROJECT:

Construction and analysis of sustainable concrete pavement using by fly ash, silica fume and recycled aggregate.

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ABSTRACT (150-300 words):

This research delves into the construction and analysis of a sustainable concrete pavement by investigating diverse proportions of environmentally friendly materials—fly ash, silica fume, and recycled concrete aggregate (RCA). With an aim to optimize these materials for enhanced sustainability, the study evaluates the structural performance of the developed concrete mix.

Through systematic experimentation involving varied proportions (15% to 25% for fly ash, 3% to 15% for silica fume, and 6% to 30% for RCA), the research yielded promising results. A specific composition, comprising 15% fly ash, 9% silica fume, and 30% recycled concrete aggregate, exhibited a noteworthy compressive strength of 45 MPa. This finding underscores the efficacy of this sustainable concrete mix for pavement applications.

The research methodology encompassed extensive testing of different combinations to identify an optimal blend that balances environmental considerations and structural performance. The achieved compressive strength of 45 MPa with the selected composition signifies a successful integration of fly ash, silica fume, and recycled concrete aggregate, demonstrating the feasibility of eco-friendly alternatives in concrete pavement construction.

This study contributes significantly to the advancement of sustainable construction practices, providing insights into the versatility of different material proportions. By showcasing the success of a specific composition, namely 15% fly ash, 9% silica fume, and 30% recycled concrete aggregate, the research offers a practical solution for achieving both high compressive strength and environmental sustainability in concrete pavements.

In conclusion, the exploration of varying proportions of fly ash, silica fume, and recycled concrete aggregate in concrete pavement construction presents a nuanced and adaptable approach to sustainable infrastructure development. The achieved compressive strength of 45 MPa with the identified composition highlights the potential for tailored blends to meet specific project requirements, emphasizing the importance of optimization in utilizing eco-friendly materials for resilient and environmentally conscious construction practices.

KEYWORDS: Fly Ash, Silica Fume, Recycled Coarse aggregates, Sustainability.

CATEGORY: Concrete Technology and Building Materials