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Strength and Durability of Fiber Reinforced High Performance Concrete Using Marine Sand

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Abstract: This paper generalized the result of study on Marine sand based High performance concrete The Land Reclamation and Development Board (Sri Lanka) plans to popularize the use of sea sand as a substitute to river sand. According to the experts in the global construction trade, Sea sand is being used in the construction industry in the Asian Region and some leading European countries.This study is to experiment the suitability to use beach/sea sand as a substitute for river sand as fine aggregate for concrete. The attempt has been made to find the various results by using sea sand and polypropylene fiber with normal concrete of M_{60} grade with maintaining the water cement ratio of 0.32. The objective of this study is to develop concrete with good strength and to protect the rebar against corrosion due to intruded chlorides from the environment or intermixed chlorides from Marine sand by using calcium nitrate. So that durability will be reached. For this purpose, the experiment is carried out on M_{60} grade of concrete using marine sand, 3.5% of calcium nitrate and different percentages (0%, 0.5%, 1%, 1.5% and 2%) of polypropylene fiber to the weight of cement. Higher grade concrete is produced by adding polypropylene fiber and calcium nitrate.

Keywords : Calcium nitrate, Durability, High Performance Concrete, Marine Sand, Polypropylene fiber.

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