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Effect of Aggregate Sizes on the Compressive Strength of Concrete – A Case Study

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Abstract: *This paper presents a comparative case study on how aggregate size, shape, and gradation impact the compressive strength of M20 grade concrete. Concrete samples were cast using aggregates collected from three distinct project sites—Borgaon, Sakharale, and Islampur. Both field and laboratory casting methods were used. The samples underwent standard tests such as sieve analysis, silt content, flakiness, elongation, water absorption, and specific gravity evaluation. Additionally, cubes were cast using well-graded aggregates and chemical admixture (Dr. Fixit). Laboratory-prepared cubes consistently yielded higher strength compared to site-casted ones. The study underscores the importance of proper aggregate grading and standardized mixing and curing practices. Practical recommendations and awareness initiatives for local contractors are also proposed.*

Keywords: Concrete, Aggregate Size, Compressive Strength, M20 Grade, Admixture, Workability, Grading

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