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Simplifying the Design of a Self-Compacting Concrete

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Abstract:

Self-Compacting Concrete (SCC) is obtained with the use of super fluidizing additives, giving the concrete the properties so that it can be placed by simple pouring. In its fresh state it is characterized by a fluid consistency and great resistance to segregation, reducing compaction defects. In the hardened state, SCC can achieve higher mechanical strengths than conventional concrete. These properties are taken into account in specific tests, and there are no standardized SCC designs, but acceptability ranges. In this work, its design is simplified by modifying the ACI 211 method for conventional concrete, considering some fixed values. This was achieved due to that after failed attempts by various teams to find the percentage of additive and coarse aggregate through the data provided by the mini-cone and other rheology methodologies for pastes, the analysis was simplified with excellent results for the dosage of the superplasticizer within the range of the manufacturers to design the SCC.

Keywords:

Design, fluidizing, self-compacting concrete, simplification.