



Methodology

An action research-based project was conducted with the help of Largo Concrete, Master Builders Solutions, and Cal Portland where initial samples were poured according to the ASTM C1579-06 standard. This initial sample data will be passed on to future students who will be able to collect a larger sample size that will produce even more accurate information on how concrete reinforcing fibers impact surface cracking and plastic shrinkage within concrete.



ASTM C1579-06 Apparatus

Testing Concrete Reinforcing Fibers to Reduce Surface Cracking

Abstract

Concrete reinforcing fibers are a fairly new technology being used in the construction industry to replace reinforcing bar in various applications. In partnership with Largo Concrete and Master Builders Solutions, this action research project aimed to test how the MasterFiber 360FF synthetic reinforcing fibers impact plastic shrinkage cracking with various types of aggregate using the ASTM C1579-06 test. Experiments were conducted which consisted of mixing and pouring concrete according to the C1579-06 ASTM standard with and without reinforcing fibers and comparing the size of surface cracks. The findings of this process, which will continue to be expanded upon by future students, show that reinforcing fibers have potential to replace steel reinforcing bar and can reduce surface cracking.

Key Words: Reinforcing Fibers, Concrete, Synthetic Reinforcing Fibers, Plasticity, Surface Cracking



Surface Cracking without Fibers



Surface Cracking with Fibers



Results

From the initial samples that were poured, it is clear that concrete reinforcing fibers improve surface cracking and plastic shrinkage, however further experimentation must take place to create a large enough sample size. Ultimately, the end goal of this project is to provide a baseline for future construction management students to test plastic shrinkage using the C1579-06 apparatus that was built to produce further knowledge on the feasibility of concrete reinforcing fibers.



MasterFiber 360FF

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