عنوان مقاله:

In Situ Strength Assessment of Concrete Using Recycled Aggregates by Means of Small Diameter Cores

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خلاصه مقاله:

By increasing the demolition of old concrete structures and the interest of civil industries to consume cheaper materials, using Recycled Concrete Aggregate (RCA) can cause environmental protection and decrease the construction costs. On the other hand, the high potential of Recycled Aggregate Concrete (RAC) in concrete industry was established by extensive experimental researches were performed to examine the properties of RAC. Like in conventional concrete, core test cut from RAC can be used to assess the in-place concrete compressive strength and sometimes it becomes an important test for monitoring in-situ properties of concrete to taking up retrofitting/strengthening measures. So the core test is often mentioned in most codes for concrete testing. The layout of this study includes four concrete mixes, two concrete grades (۲۰ and ۴۰ MPa), three core diameters (۴۶, ۶۹, and ۱۰۰ mm), five length-to-diameter (L/D) ratios (۱, ۱.۲۵, ۱.۵, ۱.۷۵, and ۲), two sizes of maximum coarse recycled aggregates (۱۰ and ۲۰ mm), two directions of core drilling which are vertical and horizontal and three ages of specimen (۱۴, ۲۸ and ۹۰ days). The core test results were compared to cylindrical and cube specimens. Results imply that the core strength of recycled concrete reduces with the increase in aspect ratio, by decreasing the core diameter, increasing the size of coarse aggregates in recycled concrete. By analyzing the results a comparison was made between recycled concrete in this study and conventional concrete in other studies, as well as code instructions.

کلمات کلیدی:

Drilled Cores, Recycled Concrete, Mechanical properties, Recycled Aggregates

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