

Experimental Fiber Reinforced Short Sleeper by the Geopolymer Method

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We fabricated two types of short sleepers using fiber-reinforced geopolymers instead of ordinary Portland cement with reduced use of steel rods which provide tensile reinforcement, and without any steel rods. Plug pull-out tests and bending tests on the fabricated short sleepers showed that the first type of sleepers, containing 1.5 vol% steel fibers, met the performance requirements of short sleepers without any steel rods, and the second type of sleepers, containing 1.5 vol% polyvinyl alcohol (PVA) fibers, 2.0 vol% polypropylene (PP) fibers, and 1.0 vol% aramid (AR) fibers, met the performance requirements of short sleepers with reduced use of steel rods.