USE OF GLASS AND FLY ASH IN MANUFACTURE OF CONTROLLED LOW STRENGTH MATERIALS
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ABSTRACT

This work was conducted to develop two types of controlled low strength materials (CLSM) or flowable slurry utilizing post-consumer glass (broken glass or glass cullet) aggregate and fly ash. Type A CLSM consisted of glass, fly ash, cement, and water; and Type B CLSM consisted of glass, sand, cement, and water. All mixtures were proportioned to achieve the 28-day compressive strength of 0.7 MPa (100 psi). The Type A CLSM mixtures consisted of a control mixture (100% fly ash without glass) and five other mixtures with glass, as a replacement of fly ash in the range of 20 to 80 percent. The Type B CLSM mixtures were composed of a control mixture (without glass) and two other mixtures at 30 to 75 percent replacement of sand with glass. The flowable slurry developed in this project satisfied the ACI Committee 229 definition of CLSM. Decreasing the amount of fly ash and increasing the glass content led to increased bleeding and segregation at high replacement levels of 60% and 80%. Permeability of Type A CLSM remained essentially unchanged except at high glass contents it was lower. For Type B CLSM, the permeability was about the same.