

Use of Bottom Ash and Fly Ash in Rammed-Earth Construction

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ABSTRACT

A demonstration of rammed-earth building construction incorporating coal combustion bottom ash and fly ash has been proposed in North Dakota, but several issues related to the environmental and engineering performance of the rammed-earth-ash product are under evaluation at the laboratory scale at the Energy & Environmental Research Center (EERC) prior to the full-scale demonstration. The work reported was designed specifically to evaluate North Dakota materials, but the procedures are applicable to materials from any location. Results of a review of the rammed-earth technology and an evaluation of market potential for rammed-earth buildings in North Dakota and the region are presented. The procedures for development of a rammed-earth-ash mix design are detailed. Results of the laboratory-scale assessment of durability are reported. A comparison of insulating properties of normal rammed earth and rammed earth-ash are presented. Results of an environmental assessment include information on trace element constituents and radon emanation.