

CHEMICAL STABILIZATION OF ADOBE WITH SELF-CEMENTING FLY ASH

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ABSTRACT

Adobe is low-cost readily available building material manufactured by local people. In addition to its low cost and simple construction technology, adobe construction has other advantages such as good thermal and acoustic properties. However compared to the other building materials, the physical properties such as compressive strength and water absorption are very low and are high, respectively.

The strength and durability of adobe could be improved by addition of different stabilizers. Stabilization is the process of blending and mixing material with soil to improve certain properties of the adobe soil. Chemical stabilization is achieved by addition of proper percentages of cement, limes, gypsum and waste gypsum, bitumen or combination of these materials to the soil.

The objective of this study was to evaluate the effectiveness of stabilizing adobe soils with self cementing fly ash. A laboratory testing program was conducted using two soils and fly ash. The specimens were prepared with each soil adding 0 %, 5%, 10%, or 15% of fly ash by weight of soil. Then physical properties of the soils were studied by evaluation of their granulometric characteristic and Atterberg limits. The effect of stabilization on compressive strength and water resistance were investigated.

The experimental results showed that the use of self-cementing fly ash as stabilizer improves the strength performance as well as compressive strength. Self-cementing fly ash stabilization also improves durability properties of adobe soil.

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