

عنوان مقاله:

Experimental Characterization of 4 types Reinforced Soil Blocks as Construction Material for Compression

محل انتشار:

ششمین کنفرانس ملی و دومین کنفرانس بین المللی مصالح و سازه های نوین در مهندسی عمران (سال: 1396)

تعداد صفحات اصل مقاله: 10

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خلاصه مقاله:

Soil is one of the first construction materials. According to the evidence of low polluting and sufficient thermal, humidity and acoustic insulating of the soil blocks, there is an increasing interest to study earthen building for sustainable development. By the way adobe strength is strongly affected by its composition, compacting type and curing. This study tries to investigate the mechanical properties of four different mix designed adobe with constant soil type, water content, fibers volume fraction and compacting type. Three different reinforcing fibers including straw fibers, nylon fibers and acrylic fibers were added to regular adobes separately when all the adobes were made by cutting the adobe ingots produced by spiral compacting machine. A number of compression tests were carried out on cubic specimens. For every type of reinforcing the mechanical properties in compression including the estimation of compressive Young modules, the peak strength, the nominal stress-strain diagram and the fracture energy were carried out. To have a view to the reliability of testing machine displacement measurement a comparison between LVDTs and testing machine results was done. At the end, nonlinear compressive stress strain models were proposed for all kinds of studying adobe and the normalized design constitutive equations by the peak compressive strengths were fitted for scaled curves with peak stress equal to unity for all adobes as a whole. Finally, compressive elastic perfectly plastic models were defined for all adobe types.

کلمات کلیدی:

adobe, experimental tests, compaction type, mechanical behavior, stress- strain models

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