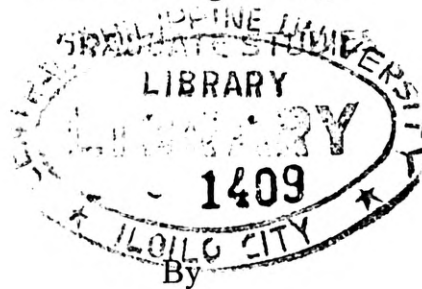


SHREDDED POST-CONSUMER POLYETHYLENE TEREPHTHALATE (PET):
AN ALTERNATIVE REINFORCEMENT FOR CLAY SOILS

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ABSTRACT

Clay is one of the most abundant components of the earth's surface. It exhibits considerable strength when air-dried. When wet, the presence of water may increase resistance by improving cohesion; however, the water also lubricates the clay particles and reduces its natural resistance to friction. This lubrication effect generally results to low shear strength of clay soils. Several techniques have been explored to increase their shear strength, and one of these is the use of randomly-mixed synthetic fiber reinforcement. This study utilized shredded post-consumer polyethylene terephthalate (PET) as soil reinforcement for sandy lean clay and fat clay soils. It was undertaken to evaluate the effect of randomly-mixed shredded post-consumer polyethylene terephthalate (PET) reinforcement on the undrained shear strength of sandy lean clay and fat clay. Unconfined compression tests were performed on these soils with shredded PET inclusions at 0%, 0.25%, 0.50%, 0.75%, and 1.0% by dry weight of the soil.

For sandy lean clay (CL), results have shown that as PET content is increased, the undrained shear strength significantly increases. It was also found out that there are significant increases in the undrained shear strength of sandy lean clay with 0.75% and 1.0% PET reinforcement. However, the maximum undrained shear strength for sandy lean clay was attained at 1.0% PET content. For fat clay (CH), there is a significant relationship between PET content and undrained shear strength of fat clay soil for PET content up to 0.75% by weight only. It was also found out that a significant increase in the undrained shear strengths was attained at 0.75% PET content. Furthermore, the maximum undrained shear strength was achieved at 0.75% PET content.