Typical UC Results

• Typical stress versus displacement curves are shown in Fig. 4. Up to the peak, the sample increases in modulus of elasticity. This is related to the slope of the stress-displacement curve in the elastic deformation region.

• The samples became more ductile as the moisture content increased.

Comparison of Different Tire Sizes

• The (50-80) mesh and the (4-16) mesh show the maximum dry density at 2% tire mixtures, whereas the (10-30) mesh tire shows it maximum dry density with no tire in the mixture. This trend displays that the smaller and larger tires make a drastic contribution to the Bentonite clay. As for the medium tire, it does show that it doesn’t contribute much to the improvement of the properties of Bentonite.

Methodology

Harvard Miniature Compaction

• Weigh and record the mold used for compaction
• Mix specific clay soil and rubber tire mixture together, as shown in Figure 2a.

Results Compaction

• For Bentonite, the moisture content corresponding to the maximum strength is the same as that necessary to maximum density.
• For Kaolin the maximum strength occurs dry of the optimum moisture content.
• The different tire sizes contribute different qualities to the two clay soils. Some will help the strength and others will not any effect on the soil.

Conclusion

• Typical stress versus displacement curves are shown in Fig. 4. Up to the peak, the sample increases in modulus of elasticity. This is related to the slope of the stress-displacement curve in the elastic deformation region.
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Abstract

• Three hundred million tires are scrapped annually in California having a large environmental impact.
• Soil Modification using these tires would help reduce the amount of tires discarded in landfills, and could also help improve the properties of the modified soils.
• Previous research results have suggested that soil modification with rubber tire has potential to improve soils properties drastically.
• Typical compaction curve is shown in Fig. 3. The peak dry density is 85 pcf occurring at the optimum moisture content of 28%.

Motivation

• Rubber tires take up much landfill space (Figure 1b).
• Improperly discarded wasted tires are a fire hazard.
• Carbon foot prints would be reduced.
• The economy would benefit with 4 billion dollars used in salaries and 10 billion dollars to be utilized in goods and services by the new jobs created by using recycled tires (ReRubber, 2011).

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