عنوان مقاله:

Behavior of Sand-Reinforced with Waste Tire Shreds Using CBR Tests

محل انتشار:

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نویسندگان:

Mahmoud Ghazavi - *Assistant Professor, Civil Engineering Department, Isfahan University of Technology*

Masoud Masoud - *Graduate Student, Civil Engineering Department, Isfahan University of Technology*

خلاصه مقاله:

The Reinforcement of soil and environmental considerations have led to the use of waste tires. In this paper the influence of tire shred contents, compaction energy, and the dimensions of rectangular shreds on California Bearing Ratio (CBR) of sand-tire shred mixtures is investigated. Tire shreds with rectangular shape and widths of 2, 3, and 4 cm were mixed with sand. Three shred contents of 15%, 30%, and 50% by volume were chosen and mixed with the sand to obtain uniform mixtures. In order to compare the compression strength of different sand-tire shred samples in CBR tests, two compaction efforts in terms of sand matrix unit weights of 15,5 kN/m3 and 16,8 kN/m3 were considered. The results show that the influencing parameters on CBR of the mixtures are sand matrix unit weight, shred content, shred width, and aspect ratios of tire shreds. For a given width of shreds, compaction effort, and shred content, the variation of aspect ratios can increase CBR up to 850%. The average value for the influence of aspect ratio variations on CBR of the mixtures for all tests has been found to be about 161%. These average values for lower and higher compacted samples containing different widths and aspect rations were 284% and 38%, respectively. It has been investigated that for a given width of tire rectangular shreds, there is only a particular length, which gives the greatest value for CBR of sand-tire shred mixtures. This is the main objective sought in this paper.

کلمات کلیدی:

Waste tire, tire shreds, sand, environment, compaction, California Bearing Ratio