Patent Search

Invention Title	IMPROVING THE SIDE STABILITY OF RETAINING WALLS USING PLASTIC BOTTLE CELLS
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Abstract:

This invention introduces a sustainable reinforcement system for retaining walls using discarded plastic bottles converted into structural confinement cells. These cells, arr within the backfill at 5–15% proportions, improve soil interlocking, enhance lateral resistance, and reduce deformation by 30–50%. The method offers performance compa conventional reinforcement materials while lowering construction costs by 40–70% and reducing plastic waste. The system supports eco-friendly, durable, and scalable construction practices suitable for residential, roadway, embankment, and slope stabilization applications.

Complete Specification

Description:This invention relates to the field of geotechnical engineering, specifically to the reinforcement of retaining walls using recycled plastic bottle cells. It focuses sustainable soil confinement techniques designed to improve wall stability and overall ground performance. The invention utilizes discarded plastic bottles to create a ce reinforcement structure that functions similarly to geocells, providing an eco-friendly and economically viable alternative for soil stabilization. The field covers soil improvement, slope protection, and environmentally responsible reinforcement technologies. , Claims:1.
A method for improving the side stability of retaining walls using recycled plastic bottle cells embedded within the backfill soil or wall structure.
2.
The method of claim 1, wherein plastic bottles are cut and riveted to form interlocking grid structures that enhance soil confinement.
3.
The method of claim 1, wherein 10% plastic bottle cell reinforcement provides optimal mechanical performance and bearing capacity improvement.
4.
The method of claim 1, wherein the reinforced system achieves higher lateral resistance and reduced deformation compared to unreinforced backfill.
5.
The method of claim 1, wherein the use of waste plastic bottles promotes sustainable construction and reduces environmental pollution.

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