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Construction of Retaining Wall Using Scrap Tyres

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Abstract: The research examined the viability of using used tyres as earth reinforcement for slope repair to recycle old tyres and create affordable, environmentally responsible slope repairs. This paper describes a study on determining the tensile strength of used tyres in absence a test standard that is now obvious. The design and implementation of the proposed scrap tyre-reinforced earth system, as well as the choice of a suitable attachment to link the tires in a field trial.

Unwanted scrap tyres are produced in enormous quantities each year, posing significant environmental risks all over the globe. The present recycling procedures for scrap tyres only allow for the usage of a relatively small percentage of used tyres. The increase in garbage tyres and the recycling rate for used tyres are incompatible. It's now a significant issue problem in many countries. The production of large portions of scrap tyres and their accumulation poses a clear risk to the ecosystem. Tire trash, whether in the shape of a tyre or as tyre waste, is a lightweight substance that might be employed.

Finding methods to recycle or reuse worn tyres has become necessary Because of this problem. The price of making tyres is far less than the cost of disposing of them. At the end of their useful life on wheels, Waste tyres are still dependable and Strong. They are widely available in sizeable amounts and regarded as disposal issues. The use of left over tyres to construct gravity retaining walls illustrated. In Brazil, natural slopes have stabilized using this technology. It making use of the Z-Wick/Z100 Tensile Tester and the Universal Testing Machine to test the tensile strength of discarded tyres. The tensile test was performed on scrap tyre samples in the popular sizes R12 to R15 A polypropylene rope with a 12 mm diameter is to be used to join the tyres. Whole Tyres must be connected after creating a surface using polypropylene rope, backfilled with soil. These tyre matts were stacked on top of one another to create a reinforced earth-like structure.

Keywords: SCRAP TYRES, POLYPROPYLENE ROPE, RETAINING WALL, STABILITY OF SLOPES, REDUCTION OF SOIL EROSION, COST EFFECTIVE STRUCTURE, EFFECTIVENESS

INTRODUCTION

Every year, a massive amount of unwanted scrap all over the globe environment poses a significant risk. Only a relatively small portion of the used tyres may use in the current recycling processes for scrap tyres. The rise of trash tyres and the recycling rate for used tyres are incompatible. In many nations, this has developed into a significant issue.

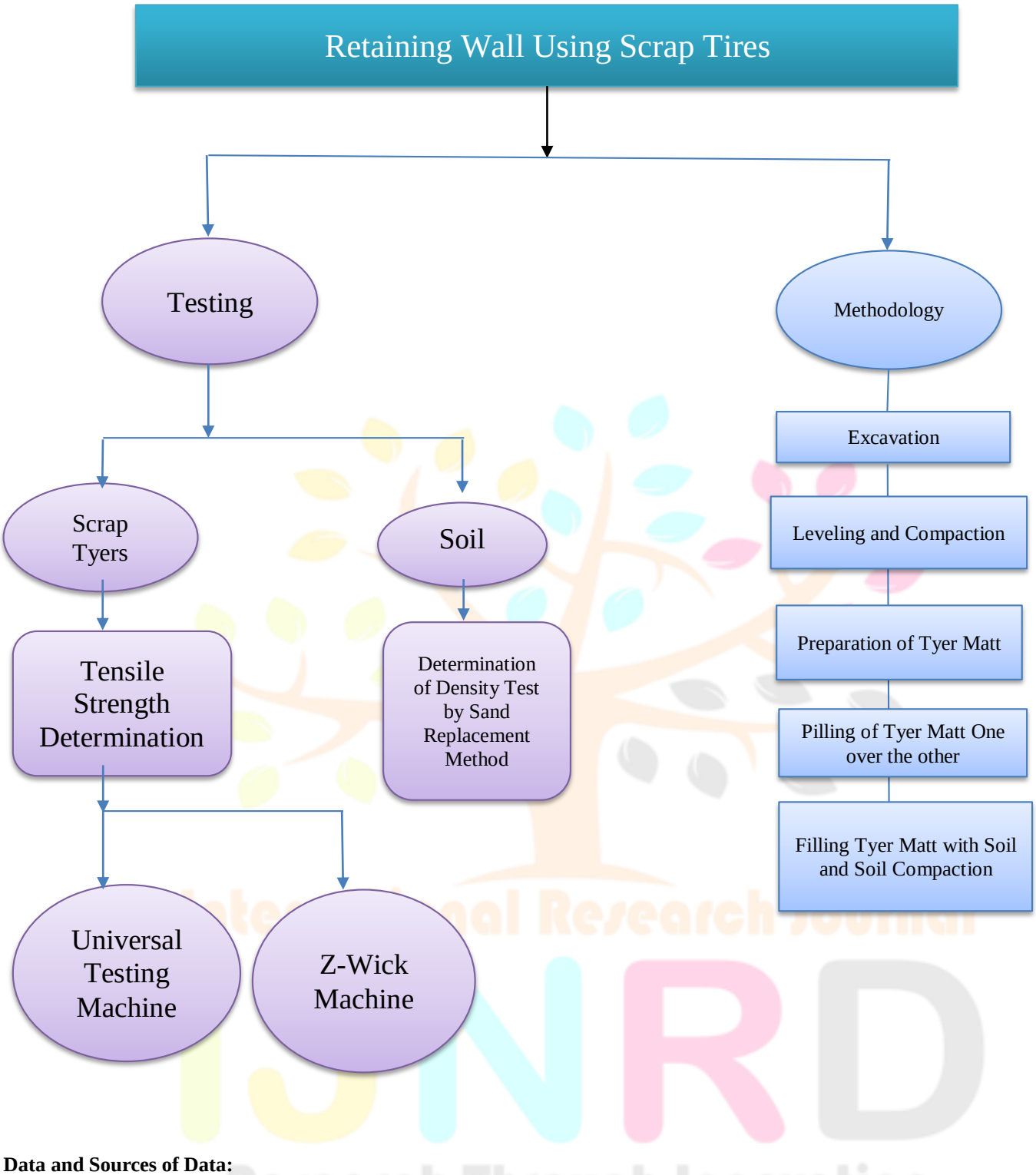
Rubber or polymer ingredients make up a tyre. Synthetic fibers and high-strength steel used to substantially reinforce the material, giving it unique attributes that is also great tensile strength, flexibility, and resistance to friction. Even after it has completed its typical life as a car, its mechanical qualities are still usable for expired wheel elements. In nations where landslides are frequent, the waste tyres are available use scrap tyres as reinforcement, especially for slope restorations, would be extremely helpful. Understanding the tire's physical, mechanical, and durability attributes is essential when using discarded tyres as reinforcement. There isn't much information accessible right now. Also, it appears that no testing standard or guideline is appropriate for measuring the tensile strength of used tyres for such a purpose. Scrap tyres are occasionally utilized as face components of retaining walls in nations like India, although not often as the system.

The physical and mechanical strength characteristics of various tires including the most popular passenger car tires were experimentally studied in this paper, as well the design of attachment that would bind the tyres together and make them function as a single unit in a reinforced earth application. The report also describes how a field that is 5 m high performs. Testing of the proposed scrap tyre reinforced earth system the completion using in-situ cohesive tropical residual. Backfill is a form of soil.

NEED OF THE STUDY

1. Retaining wall construction to be as inexpensive as possible.
2. To minimize the environmental pollution caused by the disposal of scrap tyres.
3. In order to consider soil tyre wall as a potential replacement for construction of retaining wall.
4. To use scrap tyres in construction instead of discarding them.

RESEARCH METHODOLOGY



Data and Sources of Data:

PAPER NO. 1: Application of Scrap tyres as Earth Reinforcement for the repair of Tropical leftover soil slope. Mr. Bujang B.K. Huat
Conclusion: The experiment perspective is effective because It deals with natural and financial issues.
PAPER NO. 2: Tyre Waste Retaining Wall. Mr. Pravin Mahadolkar
Conclusion: This study demonstrates outstanding slope rehabilitation performance with freshly created gravity structures. These stabilize the unstable soil.

PAPER NO. 3: Retaining Walls built with scrap tyres. Mr. A.S.F. Sayao
Conclusion: The soil-tyre wall construction is more adaptable than traditional concrete or synthetically reinforced walls. We can be seeing the lateral movement was reasonably regulated.

PAPER NO. 4: Tyre Retaining Wall on M62 Concrete. Mr. Donald C. Dalton
Conclusion: On the M62 highway, this recently developed construction method utilizing old tyres was applied effectively. It is low cost, rapid completion made the building extremely attractive.

PAPER NO. 5: Soil Stabilization by using Scrap Tyres. Ms. Dipti V. Zutti
Conclusion: It is discovered that the blend of dune sand and crumb rubber has a higher shear strength than just dune sand.

CONCLUSION:

We may conclude from previously completed experiments that trash tyres should maintain their high tensile strength even after their useful life as car tyres have passed. Moreover, polypropylene rope is an anticipated to be the best attachment mechanism for tying the used tyre scraps together to create a mat structure. It was flexible and reasonably priced, and it supplied a greater strength were suitable for the used tyre. Polymer materials are also well known for being corrosion-free and resistant to chemical and biological attacks. This type retaining wall should be less expensive to build than trash tyres. Cheap, simple testing procedures are necessary, and unskilled labour is needed to. It is an anticipated that this trial will be fruitful and reduce the environmental damage brought on by trash tyres.

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