

**NYLON GRID AS SOIL REINFORCEMENT IN
C- Φ SOILS**

By

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**To
My Family**

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ABSTRACT

In this study nylon rope has been considered as soil reinforcement in the form of grid at 6 x 6 inches spacing. To determine the resistance of the ropes under different normal stresses, simulating 2, 4, 6, 8 feet high embankments, pullout tests were performed. The apparatus for pullout test was fabricated. Five nylon ropes (¼ inches thick) in the grid were pulled out of the test pit, with the help of motorized jack. The resistance offered by the ropes was measured with the help of proving ring. Tests were conducted on Risalpur soil. Laboratory tests were carried out to determine the index properties of soil. After conducting the pullout tests, it is found that the nylon grid can be used as soil reinforcement for low to moderate height slopes i.e. 8 to 15 feet high slopes or embankments and it can also be used in the subgrade stabilization of weak soils. In this hypothesis nylon was used as reinforcement because it is cheaper than the other polymeric reinforcement (Paraweb straps) and steel reinforcement. It can be practiced in stabilizing slopes of the embankments. In the temporary works it can be utilized efficiently for reinforcing the military bunkers and underground trenches for its stability.

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LIST OF SYMBOLS

Abbreviation	Description
α	
β	
σ_1	
σ_3	
ν_μ	
σ_ν	
σ_ω	
σ_η	
$\sigma_{\eta\rho}$	
σ	
ϕ_μ	
ϕ	
σ_ρ	
τ	
ε	
ε_1	

Abbreviation	Description
A	Corresponding Area of Cross-section of Specimen (mm ²)
a	Area of Piston
ACU	Anisotropically Consolidated Undrained Triaxial Test
CU	Consolidated Undrained Test
CL	Low Plastic Clays
E _v	Elastic Modulus from Consolidation Test
F	Force
FOS	Factor of Safety
K _C	Co-efficient of Lateral Earth Pressure
G _s	Specific Gravity
LL	Liquid Limit
ML	Low Plastic Silts
PI	Plasticity Index
PL	Plastic Limit
SC	Clayey Sand
UU	Unconsolidated Undrained Test
C _c	Compressibility Index
γ	In-situ Density
σ _{po}	Pre-consolidation Pressure
μ	Poisson Ratio
E	Modulus of Elasticity

