

TERRAINSLOPE

TERRAINCELL™

OPTIMIZED SOLUTIONS FOR SLOPE EROSION PROTECTION

TERRAINMAT™

A PASSION FOR
QUALITY
A WILL TO
LEAD
A COMMITMENT TO
OPTIMIZATION



TERRAIN INFRATECH



TERRAINCELL

WHY TERRAINCELL

- High Performance Geocell.
- Saves Cost & Fast Installation.
- Utilize Locally Available, Lower Cost Infill.
- Reduces Maintenance. Durable & Long Lasting.
- Reduces Carbon Footprint.
- Comprehensive End-to-end Consulting & Support.

REFERENCE CODES



IRC SP - 102

IRC SP - 56

MoRTH - 705



OUR SATISFIED CUSTOMERS



TERRAINMAT

WHY TERRAINMAT

- Biodegradable Green Coir Cover Blanket
- Saves Cost & Fast Installation.
- No Infill Required
- Comprehensive End-to-end Consulting & Support.

REFERENCE CODES

IRC:56-2011

8.3 Coir Fascines

Coir fascines are wattles made from the fibrous outer husk of coconuts. Coir is denser than water so it will not float and is very slow to decay. Coir fascines are a readily available manufactured product and are popular for stream bank and wetland restoration where a natural look is desired. Coir fascines are placed with their tops at the water surface. Live plants can be placed into coir fascines to create a natural look. The coconut fibre accumulates sediment and biodegrades as plant roots develop and become a stabilising system Fig. 18.




Fig. 18 Coir Fascines - Before and After Application of Coir Fascines

IS 15872 : 2009

Indian Standard

APPLICATION OF COIR GEOTEXTILES (COIR WOVEN BHOOVASTRA) FOR RAIN WATER EROSION CONTROL IN ROADS, RAILWAY EMBANKMENTS AND HILL SLOPES — GUIDELINES

1 SCOPE
This standard prescribes the code for the guidelines of coir woven Bhoovastra suitable for application in slopes of road and railway embankments and also in hill slopes including the selection of woven coir Bhoovastra and installation methods.

2 MATERIALS

2.1 Coir Woven Bhoovastra
Open structure coir woven Bhoovastra made out of coir threads in which each warp thread gets interlaced alternately over and under by successive weft thread.

3 MECHANISM OF SOIL EROSION
Exposed soil surface road and railway embankments and hill slopes by impact of rain drops and surface wind which cause surface run off particles. These impacts detach the soil particles and carried away by the surface run off. These particles carry seeds and soil nutrients. Net and growth of vegetation on slope is thus hindered.

4 ROLE OF COIR WOVEN BHOOVASTRA IN SURFACE EROSION CONTROL
Coir woven Bhoovastra are permeable coir fabrics made from natural coir fibre. Coir woven Bhoovastra control soil erosion by acting as a ground cover. As a ground cover, it reduces the flow velocity of run off water by forming check dams with help of net structural strands of coir woven Bhoovastra in firm contact with soil, which absorb the impact of water flow and resist washing down keeping the soil intact.

5 SELECTION OF COIR WOVEN BHOOVASTRA
The choice of coir woven Bhoovastra basically depend on the type of soil to be protected. It requires to be covered primarily that the slope to be protected from rainwater erosion is geo-technically stable. It also required considering the extreme rainfall in a limited time span at that location as the intensity of rainfall is more important than the average annual rain fall. It is recommended that the choice of coir woven Bhoovastra shall be 400/700 where intensity of rainfall is severe irrespective of type soil and slope is <1:1.

6 INSTALLATION METHOD

6.1 The stages of laying of coir woven coir woven Bhoovastra on slopes for rain water erosion control are as under:

6.1.1 The slope shall be made free from undulations, soil slurs, mud and sharp projections and compacted with additional care where necessary.

6.1.2 Anchoring trenches shall be excavated at the top and toe of the slope along the slope downward, caring to see that it touches the soil surface at all points.

6.1.3 The selected coir woven Bhoovastra shall be unrolled across the top trench and along the slope downward, caring to see that it touches the soil surface at all points.

6.1.4 Overlaps shall be minimum 150 mm at sides and ends (see Fig. 1). The coir woven Bhoovastra at the higher level on the slope shall be placed over level. Side overlaps of a coir woven Bhoovastra piece shall be placed over its next piece on one side and under the next piece on the other.

6.1.5 The coir woven Bhoovastra shall be fixed in position by steel staples of 220 mm lengths (usually of 11 gauge diameter) or by split bamboo pegs. Stapling shall be done normally at an interval of 500/750 mm both in longitudinal and transverse directions. Special care shall be taken to staple the coir woven Bhoovastra within the anchoring trenches (300 mm depth and 150 mm width) both at the bottom and at the sides.

6.1.6 The anchoring trenches shall be filled up with brick-bats/soil for preventing displacement of the coir woven Bhoovastra. Care shall be taken that the overlaps are not displaced during installation.

6.1.7 Care shall be taken to ensure that the coir woven Bhoovastra is not damaged due to puncture, tear and other operational stresses.

6.1.8 Seeds of vegetation (grasses, legumes, etc. of appropriate variety) shall then be spread (Annex A for

Section 303 Earthwork, Erosion Control and Drainage

303.3.4 Soil Moisture and Watering Requirements
Soil moisture shall exist throughout the zone from 25 mm to at least 125 mm below the surface at the time of planting.
Watering of the seeded areas shall be carried out as determined by the Engineer.

303.4 Mulching, Applying Biomass Erosion and Jute Netting/Geotextiling/ Netting of Coir
Within 24 hours of seeding, mulching material mixed with organic manure shall be placed so as to form a continuous, uniform cover of approximately uniform thickness of 25 mm using an acceptable mechanical blower. Mulching material shall be held in place and made resistant to being blown away by suitable means approved by the Engineer. When called for in the Contract documents, mulch material shall be anchored in place with bituminous emulsion applied at the rate of 2300 litres per hectare. Any mulch disturbed or displaced following application shall be removed, reseeded and mulched as specified. Jute netting/geotextiling or netting of coir shall be unrolled and placed parallel to the flow of water immediately following the bringing to finished grade, the area specified on the drawings or the placing of seed and fertilizer. Where more than one strip is required to cover the given areas, they shall overlap a minimum of 100 mm. Jute netting/Geotextiling/coir netting shall be held in place by approved wire staples, pins, spikes or wooden stakes driven vertically into the soil.

303.5 Maintenance
The Contractor shall maintain all seeded and mulched areas until final acceptance. Maintenance shall include protection of traffic by approved warning signs or barricades and repairing any areas damaged following the seeding and mulching operations. If mulched areas become damaged, the area shall be reseeded and then seeded and mulched again as originally specified.

303.6 Measurements of Payment
Seeding and mulching shall be measured as finished work in square metres.

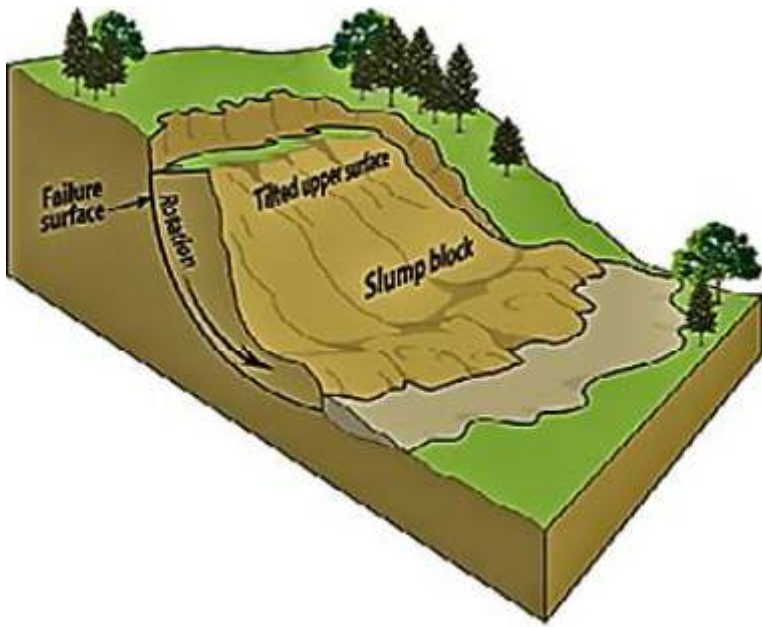
303.7 Rate
The Contract unit rate for seeding and mulching shall be payment in full for carrying out all the required operations including full compensation for all materials, labour, tools and incidentals.

IRC SP - 56

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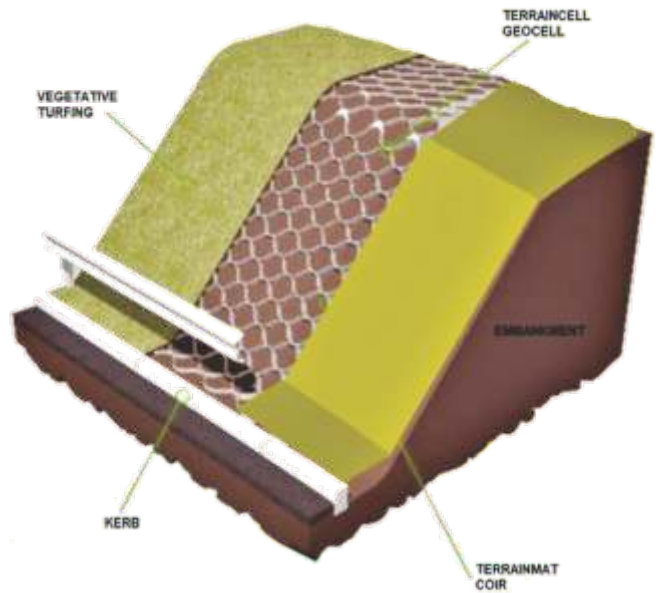
MoRTH - 308





Slope Erosion Problem?

ARRAY OF TERRAIN SLOPE SOLUTIONS



TerrainSlope Solutions



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