

CASE HISTORY

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EROSION PROTECTION WORKS FOR LANDFILL EMBANKMENT SLOPE USING TECHCELL GEOCELL AND NONWOVEN GEOTEXTILE AT KUTCH, GUJARAT KUTCH, GUJARAT, INDIA



Erosion Control

Client:	Products used:
CENTRAL POLLUTION CONTROL BOARD	TECHCELL 660X100 (CELL AREA - 660MM & CELL DEPTH - 100MM) & PR 20(NONWOVEN GEOTEXTILE)
Main contractor:	Quantity supplied:
	- - - SQM.
Manufacturer & Supplier:	Year of construction:
TECHFAB (INDIA) INDUSTRIES LTD.	2019

Project description:

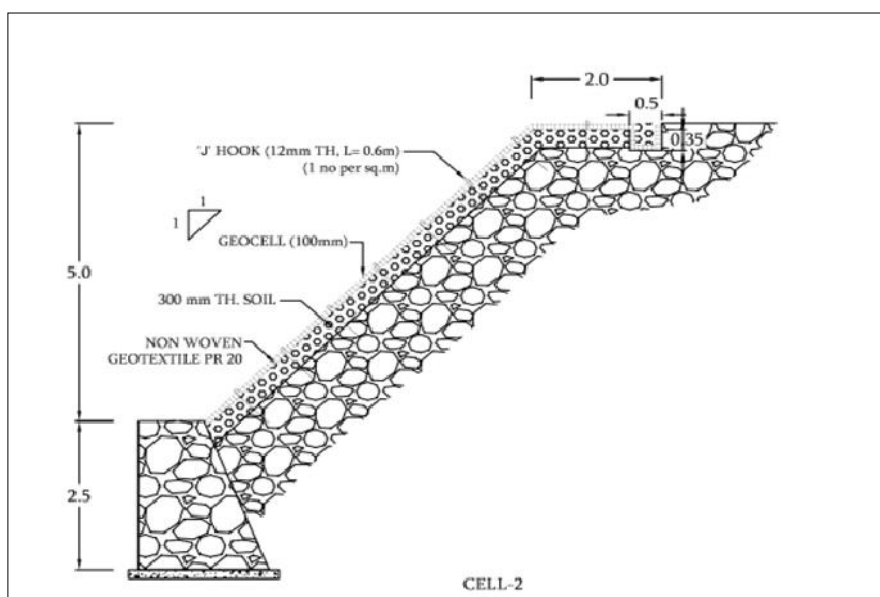
This project consist construction of cell No. 2 and cell No. 3. Landfill cells were constructed successfully after facing heavy rainfall in first monsoon season. The slope of cell No. 2 experienced rills and gullies formation.

Project Challenges:

After successfully completion of construction of Landfill, Landfill got damaged during its first monsoon which left the embankment slope of cell No.2 with many rain cuts, rills and gullies. Due to heavy rains after damage the continuous impact of rains, cuts became deep, and it is observed that if the slope erosion is not prevented at this stage then it might get worse and it may result in slope failures. So, Municipal corporation authority has decided to go with some advanced permanent environment friendly green solution to prevent the existing damaged slope erosion.

Solution proposed:

Authority as well Contractor decided to go with some sustainable solution with less maintenance and long life. So, after studying the site condition and data available it is suggested to use Techcell Geocell for erosion control. After understanding the confining ability of Techcell Geocell application, to prevent slope erosion; Municipal Corporation of Kutch decided to use Techcell Geocell for Erosion Control of embankment slope for Cell No. 2.



Typical Cross section drawing for erosion control with Techcell Geocell

How Techcell Geocell works?

- Techcell is a light yet strong 3 dimensional honeycomb like confinement system.
- The 3D confinement prevents movement and shearing of soil infill, soil erosion along steep slope.
- Techcell is perforated to allow water to pass thus dissipating water pressure and enhanced drainage.
- Techcell installation is very easy and fast in all weather conditions.
- Techcell landscaping gives aesthetically pleasant view.

Why TechGeo Nonwoven Geotextile needed?

- When the infill and sub grade are different, or if the sub grade is very soft or wet, a geotextile can provide a useful separation function by keeping the infill from migrating out from under the geocell.
- The Geotextile is used to prevent soil beneath it from erosion due to water flowing over it.
- TechGeo act as separation layer, filtration, and drainage layer to some extent.



Laying of TechGeo Nonwoven geotextile

Execution on Site :

- Prepare the base surface; Remove the debris, kankars, unacceptable soil or garbage from area where Techcell is to be laid.
- Prepare the slope with Good soil suggested in design/drawing as per given approved drawings.
- Excavate anchoring trench according to the drawing.
- As per drawing, installed the Non-woven geotextile on the prepared well compacted slope, overlap should be provided as mentioned in the drawings or installation guidelines.
- Position the Geocell section along the slope direction.
- Install J shaped anchors along anchor trench with proper alignment to hold Techcell section in place on the slope.
- Expand down the Techcell section on the slope as per the expandable dimension suggested for each techcell section and then fix Techcell by using J shaped anchors.
- Adjacent Techcell section must be leveled with each other and tie with each other using cable string supplied with Geocell.
- Install J hooks at specified distance as per the drawing to fix the Techcells.
- When Techcell has been laid in place properly, Techcell should be filled with specified material.
- To prevent possible damage, limit drop height of infill to not more than 1m.
- Infill should be delivered either to top of slope or bottom of slope using a loader.
- When using vegetative soil fills, overfill section by 25 to 50 mm to allow for settling and compaction.
- Sand and granular fill should be blade compacted to the top of the cell. Top soil fills should be compacted with loader, tamper plate, backhoe bucket.
- For vegetative slope, locally available vegetative soil should be utilized as infill. Vegetation grows naturally or local seeds can be implanted to ensure the fast vegetation growth.



Laying of Techcell Geocell



Laying of Techcell Geocell

Conclusion:

After completion of erosion protection work, Municipal corporation authority was happy with performance of both Techcell and TechGeo. After a month of completion, vegetation was grown and slope was looking beautiful aesthetically. It is observed that after completion of project, one more monsoon passed and the slope is intact and serving the purpose for which it constructed.

For further details kindly contact :

TechFab India Industries Ltd.

711/712, Embassy Centre, Nariman Point, Mumbai – 400021

Tel: + 91– 22 - 2287 6224 / 6225 Fax: + 91– 22 - 2287 6218

E: info@techfabindia.com

W: www.techfabindia.com