

## CASE HISTORY

Rev:00, Date : 20.12.2023

**CONSTRUCTION OF BASE AND REINFORCED EARTHEN WALL FOR HAZARDOUS SOLID WASTE DISPOSAL CELLS USING TECHDRAIN DRAINAGE COMPOSITE, TECHGRID UNIAXIAL GEOGRID & TECHGEO NONWOVEN GEOTEXTILE AT CSWP SITE AT VAPI, GUJARAT**  
VAPI, GUJARAT, INDIA



### Landfills

|                                 |                                                                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Client:                         | Products used:                                                                                                                                               |
| VAPI GREEN ENVIRO LTD (VGEL)    | <ul style="list-style-type: none"><li>• DRAINAGE COMPOSITE TD 55130</li><li>• TECHGRID UNIAXIAL GEOGRID (TGU 150)</li><li>• TECHGEO PR 20 &amp; 25</li></ul> |
| Main contractors:               |                                                                                                                                                              |
| BHAL INFRACON                   |                                                                                                                                                              |
| Manufacturer & Supplier:        | Year of Construction:                                                                                                                                        |
| TECHFAB (INDIA) INDUSTRIES LTD. | 2023                                                                                                                                                         |

### Project brief :

The project involves the construction of a solid waste disposal facility at the Common Solid Waste Plant (CSWP) site in Vapi, Gujarat. Vapi Green Enviro Limited (VGEL), also known as GIDC VAPI, is undertaking the project to establish a new waste disposal system to manage hazardous solid waste effectively. The scope includes the creation of landfill cells, where solid waste will be deposited and the implementation of advanced geosynthetic solutions for separation, reinforcement, and drainage.

### Problem Description :

Vapi Green Enviro Limited (VGEL) required a landfill solution for the new Common Solid Waste Plant in Vapi, Gujarat. The challenge was to create a landfill that could effectively manage hazardous solid waste disposal. The site conditions and project specifications demanded a solution that could address issues related to separation, reinforcement, and drainage, ensuring compliance with MoRTH Specifications clause 704.2.1 and IRC: SP:59.

### Solution proposed :

TechFab India Industries Ltd proposed a comprehensive solution using our advanced products - TechDrain drainage composite, TechGrid uniaxial geogrid and TechGeo nonwoven geotextile. These materials were chosen for their ability to meet all tender specifications and comply with MoRTH Specifications clause 704.2.1 and IRC:SP:59. TechDrain ensures efficient drainage and preventing water accumulation within the landfill. TechGrid provides robust reinforcement for the earthen walls and enhancing stability. TechGeo nonwoven geotextile facilitates effective separation of materials. The combined use of these products not only meets the stringent requirements of hazardous waste disposal but also aligns with environmental standards. TechFab India solution promises a sustainable and durable landfill infrastructure for VGEL's Common Solid Waste Plant at the CSWP site in Vapi, Gujarat. Other geosynthetic materials, such as geosynthetic clay liner and geomembrane were also utilized in this project.



Photo 1 & 2 : During Construction Photographs

### Benefits of TechGeo Nonwoven Geotextile :

TechGeo Nonwoven Geotextile used at the site was made of Polypropylene Staple Fibre, Needle Punched and UV Stabilized. It serves multifield applications, which are as follows:

- TechGeo acts as a “**Separator**” (separation layer) at the landfill sites by preventing the mixing of two dissimilar materials above and below the TechGeo layer. Thereby the TechGeo prevents any clogging of drainage system.
- TechGeo acts as a “**Filter**” (filtration layer) at the landfill site by preventing any soil particles from entering into the drainage system.
- TechGeo acts as a “**Drain**” (drainage media) at the landfill site by allowing in plane drainage of water through it. The drainage of Leachate is carried out by other drainage mediums like drain board etc.



Photo 3 : Laying of Techgeo Nonwoven Geotextile



### Benefits of Techgrid Uniaxial Geogrid :

TechGrid U series are uniaxial knitted polyester geogrids with a protective proprietary coating.

- TechGrid U series acts as a “**Reinforcement**” in Reinforced Earthen Wall at the landfill site.
- TechGrid U series Highly durable, resistant to acids & alkalis present in leachate or waste.



Photo 4 & 5 : Construction of Reinforced Earthen Wall Using TechGrid Uniaxial Geogrid

### **Benefits of TechDrain Drainage Composite :**

Drainage composites are formed by a combination of Nonwoven Geotextile, acting as a filter and separator on one or both sides with a core of Geonet.

- Enhanced Drainage Performance - With high flow capacity, it will reduce pore water pressure effectively and provide engineered drainage path for water to drain out.
- Faster Construction - It is easy to install therefore allows fast construction.
- It's multi-directional flow design allows a continuous path for water discharge, eliminating the potential for hydrostatic pressure build-up which increases service life.
- Drainage Composite is Cost effective and technically superior/equivalent measure.



**Photo 6 : Laying of Drainage Composite**





**Photo 7 : After Construction Photograph**

### **Conclusion:**

The contractor completed the project before the monsoon of 2023, and currently, the structure is in excellent condition. The client expresses satisfaction with the performance of TechDrain Drainage Composite, TechGrid Uniaxial Geogrid and TechGeo Nonwoven Geotextile.

**For further details kindly contact :**

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