



A Historic Landmark

Overview

The construction of landfills is extremely intricate because it is a complex, multifaceted system. It is designed to protect the ground and surroundings from contamination. Given the burden of a lot of toxic material, landfills take years to plan, develop and execute effectively. They are typically divided into areas called “cells” which are designated areas for storing the waste.

Project

Vapi Green Enviro Limited (VGEL) is a company involved in storing industrial waste from neighbouring industries situated in Vapi's large industrial belt. With increased business, VGEL needed greater storage volume at its existing landfill site to cater to at least two additional years' worth of waste. The landfill is in a congested zone and expanding horizontally would have been an expensive and unfeasible option.

The conventional approach

Conventionally, landfills constructions have containment dykes with side-slopes (as flat as 1V:3H), and filled with waste within the containment. Due to flat slopes and limited land availability, there are limitations to the height to which these dykes can be constructed. The flat slopes and limited heights impose a severe restriction to the landfill volume. VGEL had very limited space at its disposal for expansion. The conventional solution could not meet the two year requirement.

Strata's innovative approach

Thinking out of the box, Strata devised a containment system with a reinforced soil structure, which is a slim, yet safe structure. The lean structure would generate more space for storage. This vertical expansion was made possible without the need for a voluminous earth retaining structure.



Project title: India's first Vertical Landfill

Location: Vapi, Gujarat (India)

Client: Vapi Green Enviro Limited

Client's Project Consultants:

Best Geotechnics Pvt. Ltd.

Application: Creation of additional landfill cell and extension of an existing cell

System offered: Retaining structures of reinforced soil (StrataBlock™ and StrataSlope™)

Completion date: 30th March 2017

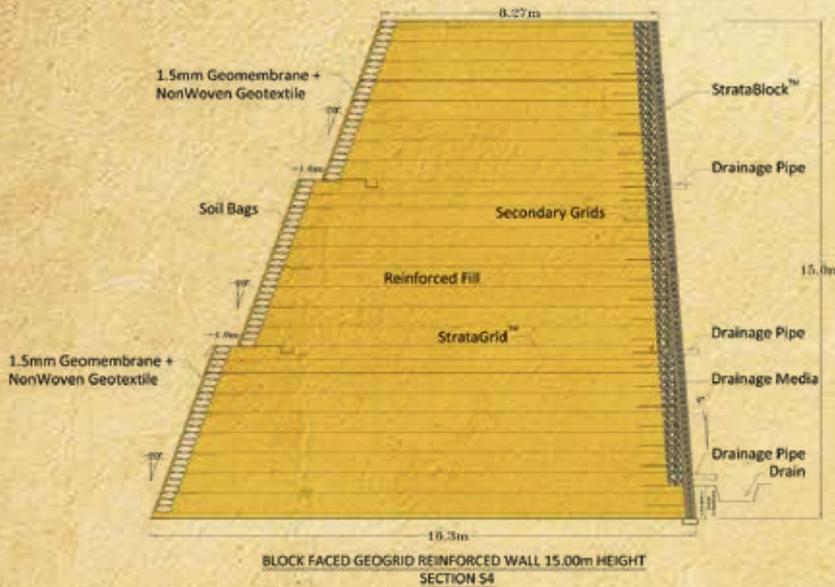


As mentioned above, the landfill is divided into cells, and each cell is filled one at a time. The first three cells were closed and covered as per statutory requirements. Strata developed Cell 4. To achieve this, Strata successfully executed the following:

- a) A horizontal spread - "Cell 4 Extension Part 2"
- b) Vertical expansion of Cell 4 "Cell 4 Extension Part 1"

The complete construction involved the cohesive use of two of Strata's innovative systems: StrataSlope™ and StrataBlock™. The inner slope (StrataSlope™) that bordered the landfill material was a StrataGrid™ (polyester geogrids) fascia wrapped around soil bags.

This face was draped with a composite of geomembrane and non-woven geotextile to prevent landfill leachate from seeping into the containment. Lastly, to provide a maintenance-free structure, Strata provided an aesthetically pleasing outer fascia. StrataBlock™ (precast segmental concrete modular blocks), in connection with the internal StrataGrid™ using keys, is the face of the wall, providing a "fortress" look to the structure. The total fascia area of reinforced soil containment system is 6,600 sqm.



- Strata's value addition:**
- **Increased** the total dumping **capacity by 2.5 times** conventional methods
 - **Cost-effective** by providing more storage revenue within the same land space
 - **Aesthetically pleasing**
 - **Safe and robust** to withstand differential settlements without distress
 - **Rapid construction** with technically sound systems
 - **Minimal maintenance** due to the innovative technologies used

About Strata



Established
2004



Manufacturing Facility
StrataGrid™ geogrid, StrataWeb® geocells at Daman, India.



Joint Venture
Strata Systems Inc. USA
(Division of Glen Raven Group)



Project Track Record
Timely & infallible installation



Global Presence
India, USA, Brazil, UK



Certification
CE TUV

Strata Geosystems (India) Pvt. Ltd. is a market leader in the geosynthetic segment for soil reinforcement solutions in India and across the globe. It was established in 2004, in partnership with Strata Systems Inc., USA - a two decade veteran in geosynthetics. Strata provides end-to-end solutions for soil reinforcement challenges including supply, design, and construction with our world renowned StrataGrid™ (geogrid) and StrataWeb® (geocells).



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