

**GROUND IMPROVEMENT FOR EAST BANK TO EAST COAST ROAD LINKAGE PROJECT
(OGLE TO ECCLES) PHASE-1 USING TECHDRAIN PVD AT GEORGETOWN, GUYANA**



Ground Improvement

Client:	Products used:
MINISTRY OF PUBLIC WORKS	• TECHGEO NONWOVEN GEOTEXTILE • TECHDRAIN PVD
Main contractors:	
ASHOKA BUILDCON LIMITED, NASHIK	
Manufacturer & Supplier:	Year of Construction:
TECHFAB (INDIA) INDUSTRIES LTD.	2023

Project Brief:

The East Bank-East Coast Road Linkage Project reflects the People's Progressive Party/Civic (PPP/C) Government's dedication to nationwide infrastructure development in Guyana. This initiative aims to seamlessly connect the East Coast and East Bank corridors, fostering improved transportation and accessibility. Additionally, it underscores the commitment to enhancing connectivity between Georgetown City and the hinterland regions, facilitating economic growth and the country's overall transformation. The project aligns with the PPP/C Government's vision for an extensive and efficient road network, contributing to Guyana's sustained development and progress.

Problem Description:

The proposed project involves the construction of a main alignment four-lane road spanning approximately 7.705 km. It starts at the junction of the Ogle Airport entrance road and the East Coast Demerara Public Road, initially following the existing Ogle Airport Road for about 1.2 km from the East Coast Road to Ogle Airport Junction. The main alignment then traverses through the residential areas of Courida and Prado Ville, connecting to Eugene F. Correia International Airport, and ultimately ends at the GUYSUCO factory area. Subsequently, the balanced length of the proposed alignment passes through the abandoned cane fields. Soft and compressible soils are present along the alignment, necessitating the implementation of ground improvement measures to increase soil bearing capacity, control settlement, and enhance the ground conditions of the path.



Site Layout

Solution Proposed:

Conventional ground improvement techniques are often expensive and time-consuming. Recognizing the need for a tailored solution to improve the ground conditions and prevent future deformation issues, TechFab proposed the use of TechDrain PVD over traditional methods like sand drains.

TechDrains PVD are geo composites with an inner core of polypropylene wrapped in a non-woven geotextile fiber fabric. The Prefabricated Vertical Drains are required to have high permeability and sufficiently high drainage capacity so that pore water escapes in horizontal direction towards the nearest drain. The water then flows freely vertically along the drain to a drainage blanket placed on the soil surface or to a highly permeable layer above or below the clay layer.

TechDrain PVD, an innovative approach in deep soil ground improvement, provides an efficient and cost-effective solution. It accelerates soil consolidation, serving as a viable alternative and demonstrating a forward-thinking approach in geotechnical engineering, addressing challenges more sustainably and resourcefully.

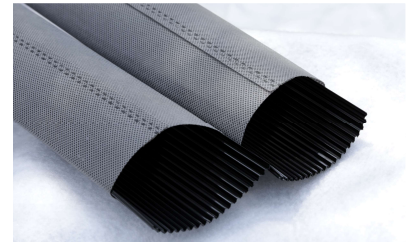


Photo 1 : Laying of Geotextile fabric on granular sand blanket layer

Why PVD perform better than sand drain

- There is no risk of PVD breaking during installation while sand drains can have discontinuities if mandrel is withdrawn too fast
- There is no risk of shear failure of PVD's during settlement as compared to sand drains
- PVD's are a consistent factory produced product wherever sand drains are subject to quality variance
- The rate of gain of strength is rapid and significant
- This method is most reliable and faster
- More economical compared with replacement method



Photo 2 : PVD base layer



Photo 3 : - Filling of white sand for PVD base layer

Execution on Site:

TechDrain PVD was installed by using static methods.

- PVD is enclosed in a tubular steel mandrel of small cross sectional area usually 50X125mm. A small steel anchor plate is attached to the drain at the bottom of the mandrel.
- The mandrel is then driven in to the soil either with a static or vibratory rig. When the design depth is reached, the mandrel is extracted.
- The anchor plate retains the drain in the soil.
- When the mandrel is fully extracted, the drain is cut off .A New anchor plate is installed and the process begins again.
- Typically between 5000 to 20,000m of PVD can be installed in a day depending upon equipment, ground and working conditions.
- We can arrange the installation of PVD's at the clients site through our associates.



Photo 4 : Installation of PSC working piles below structure



Photo 5 : Installation of PVD

Conclusion:

The project has been successfully completed, meeting its intended purpose to the satisfaction of both client and contractor. Utilizing prefabricated vertical drains not only contributed to the project's success but also led to reduced construction costs and improved construction timelines, showcasing the effectiveness of our innovative approach.

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