

CASE HISTORY

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IMPROVEMENT OF RURAL ROADS USING TECHCELL GEOCELL AT BETTADAPURA VILLAGE, CHAMARAJANAGAR, 60KM FROM MYSORE

CHAMARAJANAGAR, KARNATAKA, INDIA



Pavement Stabilization

Client:	Products used & Quantity supplied:
PRADHAN MANTRI GRAM SADAK YOGANA (PMGSY), KARNATAKA	TECHCELL GEOCELL - 356X125
Main contractor:	
M/S. H M SHANTHAPPA, MYSORE	
Manufacturer & Supplier:	Year of construction:
TECHFAB (INDIA) INDUSTRIES LTD.	JUNE 2019

Project brief:

Pradhan Mantri Gram Sadak Yojana (PMGSY) is Centrally sponsored scheme with the objective to provide all-weather road connectivity to all eligible unconnected habitations, existing in the Core Network, in rural areas of country.

Some of the stretches of PMGSY roads in the state of Karnataka are under weak soils which affects the long term performance of these roads, in order to provide all weather roads for areas with soft and weak soils, it is necessary to adopt suitable technologies which enhance the pavement life and functioning.

Bettadapura is a village located 60km from Mysore district, in the state of Karnataka. The road stretch which was to be stabilized was the only access to the village. And the road which was passing through rich black cotton soil having a very low bearing capacity and on both sides of road the agricultural fields was present, which was causing continuous seepage of water through the crust of road.

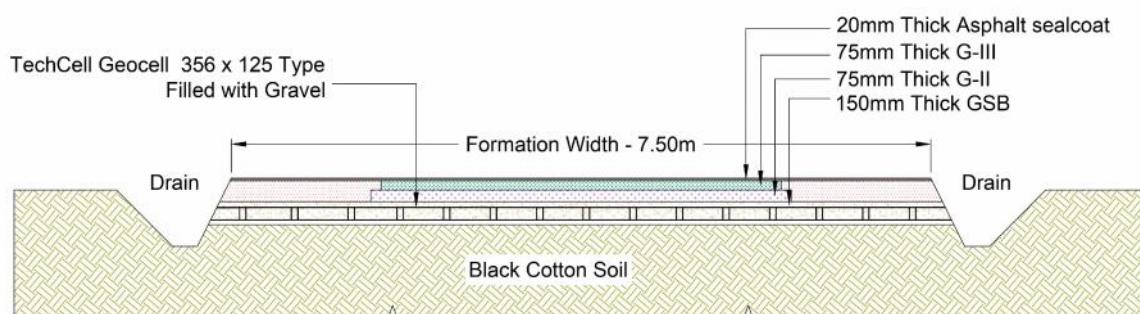
Due to these reasons the existing road was damaged in the form of major settlement, cracks, unevenness resulting overall damage to the road. Depressions & signs of distress was seen in major area, which resulted in very bad riding quality and ultimately resulted in slow traffic movement.

Considering the existing pavement condition, it was decided by the Client to go for pavement rehabilitation solution that is durable.

Solution proposed:

The Client mentioned the problem to TechFab India Industries Ltd. for the improvement of the existing road. Ease and speed of construction was a key element in the design selection process. We have suggested the use of TechCell Geocell for the pavement stabilization of the existing road under the new pavement technology to the Karnataka Rural Road Development Agency.

The use of Techcell Geocell not only increase the strength and bearing capacity of soil but also enables a reduction in the layer thickness of base and sub grade layers resulting in cost saving which results saving in project and life cycle costs. The perforation (holes) in Techcell walls enhances the drainage and releases pore water pressure from pavement section.



Typical Cross Section drawing

The solution included construction of Flexible pavement over weak ground by using Techcell Geocell (356 X 125) filled with marginal granular material. TechCell will improve the modulus of marginal fill material and transfer the load pressure to wider area and hence reduces the strains to permissible limits.



Compaction and preparation of subgrade for laying Techcell Geocell



Spreading of TechCell Geocell above the subgrade

The advantages of Techcell Geocell for pavement stabilization works are as follows:

- Lower capital costs - lower aggregate costs, reduced pavement structure, Enables use of lower quality / local granular infill in base layer
- Lower maintenance costs - decreases pavement degradation, repairs, rehabilitation cycles
- Easy and fast all-weather installation by work crews (trained onsite)
- Reduce infill requirements decrease quarrying, hauling, fuel and carbon pollution



Joining of two Geocells with Cable Ties

Why Techcell Geocell is recommended?

Techcell is the cellular confinement system created, indigenously manufactured and distributed by TECHFAB INDIA made from High Density Polyethylene stabilized with carbon black which has higher tensile strength and stiffness.

Techcell is expanded on-site to form a honeycomb like structure, which is in filled with granular infill which creates unique cellular confinement system. Techcell will increase the shear strength of the confined soil, and increase load carrying capacity. With granular infill material and holes in Techcell wall, it enhances drainage and release pore water pressure.

Techcell is used for soil confinement, stabilization and reinforcement in wide variety of load support applications.

Execution on Site:

- The work site shall be well prepared before the installation. The ground shall be compacted in accordance with the project specification. All surfaces to be deployed shall be free of all foreign and organic material or sharp objects.
- Stretch Techcell Geocell to maximum area and allow it to relax and install J-pins (permanent or temporary) to anchor the edge cells. Align and fasten the Geocell by using hooks.
- Fill the system with the infill material suggested and level to approximately 30mm above the cells. Compact the infill material with Roller or compacter as suggested by Engineer in charge or as per the project specification.
- Proper side-to-side cell alignment is maintained to prevent loss of cell infill material. Compact every surface of the panels well as per the specification.
- Road pavement was ready to be laid with bituminous layers.



Filling and Compaction of granular material into the TechCell Geocell



After filling and Compaction of granular material into the TechCell Geocell



Road Pavement after completion

Conclusion:

The construction of road is completed successfully and after two monsoons it is in excellent condition with good riding quality and the Department officials are satisfied with the performance of TechCell GeoCell.

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