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CASE HISTORY

Construction of a 7,00 m high wall for a new highway linking the Northern entry into Beirut with the City Centre

PRODUCT	TENAX TT SAMP mono-oriented geogrids
LOCATION	Périphérie de Beyrouth, Beirut Lebanon
CONSULTANT	Dar El Handasah
CONTRACTOR	Selwan EST.
DESIGNER	Geosynthetics Technical Office - TENAX SpA (Italy) and Geoscience S.A.R.L. (Lebanon)

PROBLEM

A major new highway linking the centre of Beirut to the northern outskirts for the city was to be constructed. The new 4,00 km long highway was to be constructed on reclaimed land consisting mainly of soft subsurface soils. Reinforced concrete walls were ruled out due to both the excessive settlements that were expected and the low bearing capacity of the subsoil.

SOLUTION

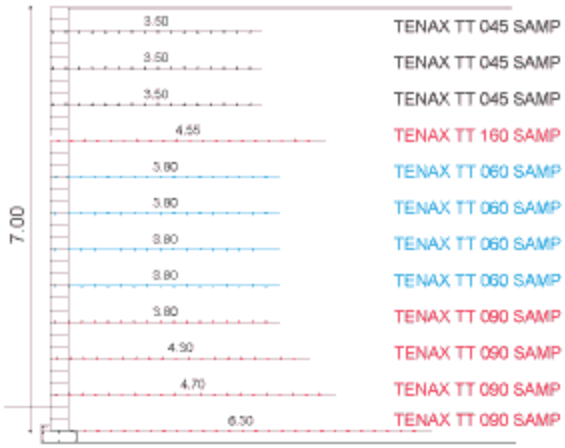
Working closely with both the consultant and contractor, Geoscience, the local TENAX distributor, proposed a cost effective Mechanically Stabilized Earth Wall solution using TENAX geogrids as the reinforcing element and the Geoscience modular block as a facing unit.
Incorporated within the design was the ability to include wall patterns depicting various images of Lebanese culture. The modular block wall system was installed at heights ranging from 2,00 m to 7,00 m. TENAX TT SAMP geogrid reinforcement layers were incorporated within the backfill at a maximum of 60 cm spacing. Compaction was carried out at 30 cm lift heights to ensure the required design load capacity was met.
The unique design of the Geoscience modular block allows a free draining material to be placed within the voids to act as a drainage medium which helps eliminate the effects of hydrostatic pressure. As the walls were faced both sides the total length of walls that were to be constructed was 8,00 km (the total length of the road was 4,00 km with 2,00 km of wall on each side). Monitoring of the completed walls indicated very good performance with negligible settlement occurring.

CONCLUSIONS

The use of a TENAX TT SAMP geogrids and the Geoscience modular block retaining wall system allowed the consultant to minimize land take and incorporate an aesthetically pleasing finish to the facing elements.
Ease of installation allowed the contractor to maximize the use of unskilled labor in the construction process. Observations of the completed works show no signs of settlement or movements.

The TENAX/Geoscience system provided the following benefits:

- Quick and simple construction methods allowed the project to be completed within the required program.
- A cost effective solution that allowed the project to be constructed within budget.
- A facing unit that allowed the use of colored blocks.
- A free draining reinforced soil structure.



WALL HEIGHT: 7.0 m
Embedding of the foundation: 0.40 m