



Mirdif Interchange, near vertical Terraforce terraces, 9300m²

Roadside Retaining Walls

Traffic interchanges are structures that use grade separation with ramps to facilitate rapid flow of traffic in various directions without directly crossing any other traffic stream. When traffic increases, interchanges become unavoidable, they cost a fortune and often have to be squeezed into a tight space. The result is that creative engineering design has to be employed, demanding cost effective retaining structures that can rapidly be built while offering a safe and long lasting solution.

Mechanically Stabilized Earth (MSE), an ancient technique of using artificially reinforced earth to build stable retaining walls is one of the prominent methods employed during construction of such interchanges. MSE has evolved and developed further over the years by many stakeholders, some claiming to be the inventors of this "new technology".

Today, this method is well understood, tested and employed on numerous sites around the world. It is relatively easy to adapt the height and inclination of such retaining walls, depending on what type of system is being used.

Terraforce blocks, being very versatile, are becoming very popular for such applications. They offer the advantage of being hollow units that can be filled with crushed stone or concrete if required, while no connectors between blocks or to anchor the reinforcing material are required.

Pull-out resistance during laboratory tests (referring to the force required to separate the reinforcing grid from the block facing) has been shown to be above industry standard.

In spite of the economic downturn of 2008, construction activities for infrastructure projects in the United Arab



Mirdif Interchange Dubai.
Terraforce L16, Consent LLC



Landscaping features with L16 Terraforce blocks

Emirates have maintained at a steady pace and two interchanges using the Terraforce system were recently completed in Dubai. Both have yet to be landscaped.

The first to be completed, Mirdif interchange, is situated at the intersection of Al Khawaneej and Algeria roads in the residential area of Mirdif in Dubai and was designed and constructed to replace an existing one which could not accommodate increasing traffic volumes, generated by the development of surrounding areas.

The interchange was planned as a single point urban interchange and should cater for increased traffic volumes for the next 15 to 20 years. The project presented planners and contractors with the following challenges:

- Limited space available, necessitating steep side slopes, retained with Terraforce L16 (split face) composite



Terraforce L16 retaining walls with capping stones

retaining walls and vertical Freyssinet panel retaining walls. Thus the impact on surrounding land and facilities was minimised. The Terraforce blocks were used to support both sides of the four ramps, as well as the approaches to the cross road.

A total of 9300m² of Terraforce walling was thus installed, reinforced with Fortrac 35/20 – 20 T geogrid with heights of between 0,5m to 4m.

- The area was quite congested in terms of utility services that had to be diverted, while traffic flow had to be maintained during construction.

- Planners had to avoid the costly exercise of shifting a large telecommunications tower on the site.

Construction of this R 500 million project commenced in

2007 and was completed in Dec 2009. The Second interchange, Jebel Ali, was completed shortly thereafter.

Credits/ Mirdif Interchange

Client: Road and Transport Authority. Dubai.

Consultants: Aurecon/Al Burj Consultants, Joint venture.

Main Contractor: Wade Adams.

Design of Terraforce walls: Mirjana Engineering/Huesker Synthetics.

Supply of Terraforce blocks: Consent LLC. (9300 m²)



Jebel Ali Interchange Dubai.
Terraforce L16, Consent LLC



Landscaping steps and concrete capping.

Credits/ Jebel Ali Interchange

Client: Road and Transport Authority. Dubai.

Consultants: Consult LTD.

Main Contractor: Shimizu Corp.

Design of Terraforce walls: Mirjana Engineering/Huesker Synthetics.

Supply of Terraforce blocks: Consent LLC. (4000 m²)