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Soil Reinforcement | Separation | Drainage

Case Study

application	Reinforced Walls
location	Keizer, OR
product	Mirafi® MMESH, 140N, and Miragrid® 5XT
job owner	City of Keizer
engineer	Geo Design, Inc
contractors	General: Kerr Construction Wall: Castle Walls

TenCate develops and produces materials that function to increase performance, reduce costs and deliver measurable results by working with our customers to provide advanced solutions.

THE CHALLENGE

Keizer Station shopping center, which is a public-private partnership between the City of Keizer and the development firms Northwest National LLC and RPS Development, is a 237-acre mixed use retail shopping center, located in Keizer, Oregon. The site is divided by a railroad running north-south through the site. Developers were challenged with providing adequate traffic flow across the development and providing aesthetically pleasing roadways throughout the site. Geo Design, Inc. from Vancouver, WA was hired to aid in designing a series of retaining walls that would support a lowered roadway section underneath the railroad tracks. Initially the walls were designed as cast-in-place concrete walls, but it was determined that they would not be aesthetically pleasing, and would only aide in providing a typical unappealing "concrete" highway feeling to the new roadways. The other challenges included on-site soils that consisted of wet sandy silt/silt and groundwater conditions that made it difficult to lower the roadway underneath the railroad tracks.

THE DESIGN

Kerr Construction the general contractor on the job suggested using Mirafi® MMESH MSE retaining walls as a value-engineered item and means to provide a suitable support system. The engineers designed a series of Rockeries, Concrete face walls and Miramesh retaining walls to support the excavation while saving project dollars. Global Stability was the driving factor for the walls which are keyed in 2-3 feet below the new subgrade. Mirafi® MMESH was chosen as a viable product to provide both a vegetated face and as a secondary reinforcement for the Miragrid® 5XT at the face of the walls. Wire baskets were used to achieve compaction at the wall face and control the batter of the near vertical wall face. A topsoil that promotes vegetative growth was placed directly behind the Mirafi® MMESH geosynthetic at the wall face. Strawberry seeds were then planted within the topsoil layer during the construction of the mse retaining walls. Mirafi® 140N was used as a filtration-separation barrier for the granular backfill and the native fine-grained soils, as well as the topsoil placed in the face of the Mirafi® MMESH walls, see cross-section.

THE CONSTRUCTION

The construction of the walls was contracted out to Castle Wall Contractors, who has experience with constructing many different wall types. The Challenges that had to be overcome was the top down construction of this lower roadway section that had ever changing batter of the different wall types adjacent to each other combined with the wet-weather conditions of the Pacific Northwest. The project was completed ahead of schedule and under budget due to value engineering and efficient MSE wall construction.

The beginning excavation of the lower roadway section.

The construction of the MSE walls along the southern portion of the new roadway.

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Growth begins through the MMESH.

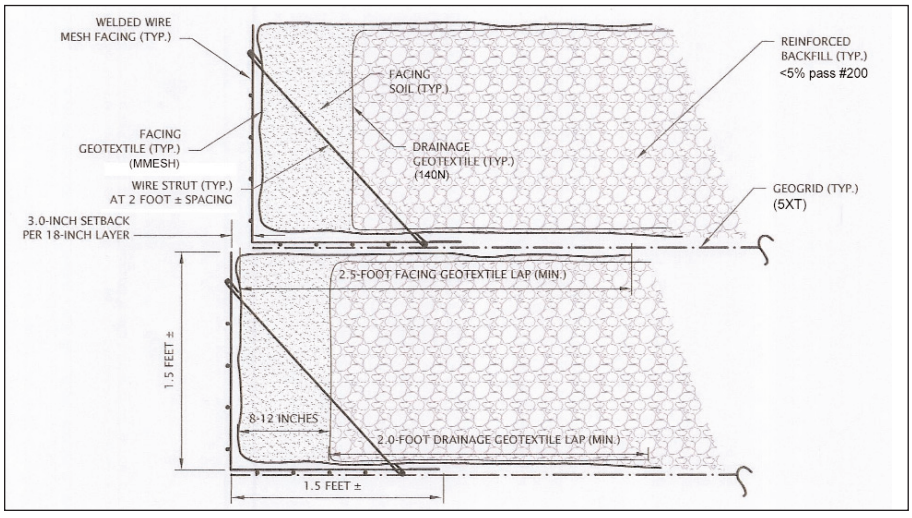
THE PERFORMANCE

To construct the lower roadway section, without getting the typical freeway tunnel feeling, was a challenge. Without the use of TenCate Mirafi® MMESH and Mirafi® geosynthetics, this would have been difficult. Vegetation growth has started and the strawberries are coming. The vegetated/green Mirafi® MMESH MSE retaining walls saved money over the typical concrete retaining walls originally planned for the site, and are performing better than expected. The Mirafi® MMESH MSE retaining walls and are a nice alternative to the typical concrete retaining walls found along most freeways.

References:
Daniel J. Trisler PE
Geo Design Inc.
1201 SE Tech Center Drive Suite 160
Vancouver, WA 98683

The beginning stages of Strawberry growth along the northern wall.

Above: The completed MSE walls without the other facing options.
Below: The completed roadway with multiple MSE wall faces



MMESH wall with welded wire basket face. Drawing courtesy of Geo Design Inc.

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