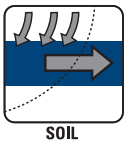
TENCATE Mirafi®



Case Study

application	Welded Wire Wall	job owner	J.Smithson
location	Burlington, Ontario, Canada	engineer	InterSol Engineering
product	Miramesh® GR, Miragrid® 3XT & 160N	contractor	Norseman Steel Fabricator

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

A two story residential home that was built 18 years ago on the Niagara Escarpment was experiencing settlement at one corner of the foundation. The home is situated on the side of a slope. Upon site investigation it was determined that the house had been founded on partially compacted fill. To compound the situation, an underground water course entering the front of the structure was applying pressure to a grout pack due to the migration of soil underneath the rear footing. In order to prevent further migration of soil from underneath the footings a 4m (13ft) deep x 60m (200ft) french drain was constructed along the north side of the house. A 3m (10ft) x 60m (200ft) welded wire wall was constructed at the west end of the property to apply a surcharge to the overbearing fill at the rear of the property to prevent further down slope migration of the soil.

THE DESIGN

Since the property backs onto conservation land, a welded wire wall system was chosen for its ability to accommodate differential settlement and to allow for a vegetated front face. Wall batter is 3 degrees with each layer set back 200mm (8in). A slope stability and SRW wall analysis were performed to determine the reinforcement requirements. It was determined that Miragrid® 3XT high tenacity polyester geogrid, with an embedment of 2.4m (8ft) spaced at 500mm (20in) would satisfy the project requirements. Since the wall face was to be vegetated, erosion protection was critical in ensuring long term erosion protection and stability of the vegetated face. Miramesh® GR polypropylene open mesh woven monofilament geotextile was selected for the face wrap. To collect any water seeping from the slope a 100mm (4in) perforated pipe was installed parallel to the wall face to provide drainage.

Site access was extremely limited. The contractor could only access from one end of the wall for both excavation and backfilling. Once a 2.4m (8ft) bench for the wall was excavated, construction of the welded wire wall commenced. The wall was constructed with 100 x 75 x 3000mm (4x3x10ft) 6 gauge

A welded wire wall is constructed with Miragrid® 3XT, Mirafi® 160N, and Miramesh® GR.

Miramesh® GR is selected as the face wrap to protect the vegetation from erosion.

pregalvanized 500mm (20in) high baskets. Wire struts which provided alignment and wall batter were installed at 500mm (20in) centres.

Once the granular leveling pad was installed, the first rows of wire basket were placed along the entire length of the wall. Each basket was overlapped 100mm (4in) and wired together. Next, Miragrid® 3XT was placed to the front face of the wall. The green Miramesh® GR was then installed at the front face along with the wire struts. To separate the topsoil and granular reinforced zone, a Mirafi® 160N nonwoven geotextile was used. Before placing the topsoil at the face it was mixed with a grass seed mixture. Because of the limited access, a small skid steer loader was used to place both the topsoil and granular backfill. Both the topsoil and granular were compacted in 200mm (8in) lifts using a jumping jack and diesel plate tamper. Crew size consisted of 4 men. The crew was able to install 60m (200ft) of baskets a day.

THE PERFORMANCE

Post construction inspection has indicated that the french drain is intercepting the underground water course and the slope has started to stabilize. Vegetation is beginning to grow. Grouting of the buildings footings can now commence.

Each basket overlapped 100mm (4in.) Miragrid® 3XT was placed to the front face, then Miramesh® GR was installed along the wire struts.

Mirafi® 160N seperates the topsoil and granular reinforced zone.

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