



## Case Study

**application** Reinforcement & Drainage  
**location** Santa Barbara, CA  
**product** Mirafi® RS380i

**job owner**  
**engineer**  
**contractor**  
**distributor**  
**date of installation**

**The City of Santa Barbara Municipal Airport**  
**Earth Systems Pacific & Tartaglia Engineering**  
**John Madonna Construction**  
**Triumph Geosynthetics**  
**July - August 2013**

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

The Santa Barbara Airport is bordered by the wetland known as the Goleta Slough. Much of the airport area was built on fill material that was placed directly over the existing wetland soils with groundwater at only 4 – 5’ below grade. Some areas of the original construction remained stable, while other areas experienced settlement. Deep excavations to remove underlying saturated soft soils were unsuccessful on past projects on the site, due to high ground water and deep layers of pour in-situ soils. The design engineer was forced to find a way to successfully reduce differential settlement and bridge over all of the native wetland soils to create a stable platform for the runway/taxiway construction without any deep excavations.

### THE DESIGN

The Geotechnical Engineer, Earth Systems Pacific of San Luis Obispo made recommendations to use TenCate Mirafi® RS380i\* high modulus geosynthetic directly over the soft subgrade in conjunction with a biaxial geogrid within the base section. The high modulus and friction of the TenCate Mirafi® RS380i reinforce the base section, while increasing the overall bearing capacity of the design section. TenCate Mirafi® RS380i also offers a permeable separator that allows pore water pressure into the base, while separating the clean base from the fine grained soils below. This design would potentially reduce differential settlement and enable construction over very soft underlying soils without deep excavations that would typically be required without the use of a high modulus permeable geotextile. This method allows construction of the runway/taxiway areas without disturbing soils below the groundwater table.

### THE CONSTRUCTION

Multiple areas in the taxiways were excavated to 21 inches below grade. The contractor placed Mirafi® RS380i geosynthetic directly onto the soft subgrade and then placed a 5 inch layer of asphalt grindings on top of the Mirafi® RS380i. A type 2 biaxial geogrid was then placed over asphalt grindings and covered with 10 inches of class II aggregate base. Following compaction of the base, a 6 inch section of asphalt compo-

sition finished out the design for the runway/taxiway section. By using the TenCate Mirafi® RS380i high strength geotextile, that was available locally, the project was built on time and within budget.



TenCate Mirafi® RS380i is laid out over the runway section at the Santa Barbara airport.

**THE PERFORMANCE**

With the use of TenCate Mirafi® RS380i geosynthetic, Earth Systems Pacific & Tartaglia Engineering were able to design the runway section allowing for superior subgrade enhancement and section performance. TenCate Mirafi® RS380i performed as intended and this runway/taxiway section at the Santa Barbara Airport will support airplane traffic for years to come.

TenCate Mirafi® RS380i Provides:

- Superior tensile strength and modulus for subgrade support – increased bearing capacity and stabilizing the design section over very soft subgrade soils.
- Separation of the natural subgrade soils from the asphalt grindings & aggregate – extending the overall section lifespan
- Lateral confinement of the base section
- Filtration of water from the saturated wetland soils – reducing build up of pore water pressure below the geosynthetic section that can cause pumping soil conditions

The result was a stable runway section that will withstand the demands of constant airplane traffic.



The bulldozer spreads out the asphalt grindings over Mirafi® RS380i.



Workers help spread the asphalt grindings evenly over Mirafi® RS380i high strength geotextile.

\*Patent Pending

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