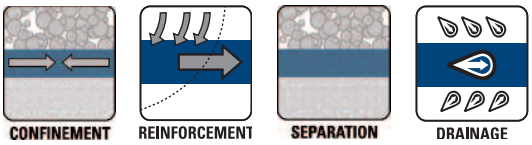
TENCATE Mirafi®



Case Study

application	Subgrade Stabilization	job owner	King County, WA
location	Issaquah, WA	engineer	Icicle Creek Engineers Carnation, WA
product	Mirafi® RS580i	contractor	KLB Construction
		date of installation	November - December 2012

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 East Lake Sammamish Trail (ELST) is part of King County's nationally acclaimed regional trail system – a 175 mile-long network of trails for bicycling, hiking, walking and horseback riding. The regional trail system provides extensive opportunities for recreation and non-motorized mobility and commuting throughout King County. Once the ELST is fully developed, it will be part of a 44-mile-long regional urban trail corridor from Seattle's Ballard neighborhood to Issaquah. The ELST follows a historic railroad route along the eastern shore of Lake Sammamish. Within the cities of Redmond, Sammamish and Issaquah, are part of the "Locks to Lakes Corridor,". The existing trail currently follows an off-road corridor along the lake and through lakeside communities, however King County has decided to improve the trail to make it more accessible and usable for a wider variety of non-motorized recreation. Improvements to the trail included: removing the existing gravel trail; constructing a 12-foot-wide asphalt trail with gravel shoulders; installing concrete sidewalk connections, retaining walls, fencing and signage; and wetland mitigation. During the removal of the existing gravel trail, the contractor encountered very soft saturated soils and high groundwater - making it difficult to achieve a stable roadway section while maintaining the correct grade. Icicle Creek Engineers contacted ACF West to see if they had any products in stock that could bridge these soft soil conditions. ACF West recommended that TenCate be contacted to see if their engineers would think it was an appropriate application for their Mirafi® RS580i* woven geotextile.

*Patent Pending

THE DESIGN

Having local support and knowledge has always been a key aspect to the engineering community at TenCate, and this project was no exception. To keep the contractor on schedule during the wet winter climate of the Pacific Northwest is no easy task. After a brief meeting with Icicle Creek Engineers, it was determined that Mirafi® RS580i would be an excellent product to place on the subgrade to help bridge the saturated, soft glacial soils and to provide reinforcement to the thin rock layer that would support the new trail system. Mirafi® RS580i with its superior modulus, very high strength, high permittivity, separation, confinement and of course its identification (unique orange fibers offer easy identification) made it an easy choice for the engineers to use.

Installation of Mirafi® RS580i over the soft subgrade was done with ease thanks to the 17' wide rolls and strength of the product.

Mirafi® RS580i provided immediate support over the saturated subgrade for equipment loading.

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THE CONSTRUCTION

The estimated cost of improving the Issaquah segment of the ELST is $2.74-million. The extensive scope of work in the trail's narrow corridor required complete closure of the trail and made it difficult to move materials to and from the site. TenCate Geosynthetics provided both 15' and 17' wide rolls of Mirafi® RS580i to the project - which reduced costs by eliminating excessive overlap and waste of materials. It was decided that 12-18" of crushed rock would be placed on the high-strength geotextile to provide a stabilized working platform for the contractor prior to placement of asphalt. The contractor preferred using Mirafi® RS580i, because it was hassle free and didn't roll up on him after they rolled it out like other Geosynthetics (no unwanted memory). They also noticed the rougher feel of Mirafi® RS580i, which provided more friction and better confinement of the rock above the fabric. Overall the product was installed with minimal effort and provided a superior advantage to bridging the soft soils that were encountered throughout the trail corridor.

THE PERFORMANCE

The damage resistance of Mirafi® RS580i provided unmatched durability compared to other competitive geosynthetic products on the market. The wider roll widths of Mirafi® RS580i helped reduce waste and overlap. The high modulus (strength at low strain), high friction (creates better confinement of aggregate) combined with high permittivity (to reduce pore water pressure from saturated subgrade soils) allowed Mirafi® RS580i to stabilize the saturated subgrade with a thinner aggregate section than conventional methods – resulting in overall project cost and time savings. TenCate Mirafi® RS580i will also continue to offer a permanent separator between the fine grained saturated soils and the clean aggregate above. Overall this project was kept on time because of our local supply and availability and the trail will open on June 12, 2013 with a ribbon cutting ceremony.

Mirafi® RS580i demonstrating immediate aggregate interaction (interlock) over a soft subgrade.

Finished trail open for cost-effective, long-term use.

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