



Case Study

application	Subgrade Stabilization
location	Santa Ana, CA
product	Mirafi® RS380i

job owner
engineer

Rancho Santiago Community College District
Geo-Advantec, Inc.

contractor
date of installation

Southern California Grading
March 2014

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

Rancho Santiago Community College District performed a parking lot expansion in the Spring of 2014 at Santa Ana College located within the City of Santa Ana, California. The improvement projects associated with parking lot and fire lane pavements utilized Mirafi® RS380i woven geosynthetic in order to reduce pavement thickness thus avoiding any conflict between over-excavation/grading and the existing underground utilities.

THE DESIGN

The Geotechnical Engineer, Geo-Advantec of San Dimas, California designed pavement sections for the parking lots and fire lanes. Both sections consisted of concrete pavers underlain by bedding sand and a geotextile. One paver section was installed on Asphalt Concrete (AC), and the other on Portland Cement Concrete (PCC). The on-site native subgrade consisted of slightly sandy silty clays and/or clays. Pumping soils during the required compaction was expected because of the high moisture content of existing clayey soils. Geo-Advantec recommended a layer of Subgrade Enhancement Geotextile (SEG). This geotextile layer, Mirafi® RS380i, was placed below the Class II base beneath the AC and PCC pavement sections. The intent of the Mirafi® RS380i was to provide subgrade stabilization, separation between soft subgrade fines and base material, as well as decrease the total thickness of pavement sections. Mirafi® MiraSpec software was used to calculate the reinforced pavement sections using subgrade strength and loading parameters.

THE CONSTRUCTION

Rancho Santiago Community College District hired McCarthy Building Companies, Inc. as the General Contractor. McCarthy subcontracted to Southern California Grading for the earthwork and paving. Southern California Grading procured the Mirafi® RS380i through WhiteCap Construction Supply. WhiteCap delivered approximately 65 rolls that were 15 feet wide by 300 feet long. For the pavement sections with pavers on PCC pavement, the Mirafi® RS380i was installed on compacted native soil. Eight inches of Class II base was placed directly on Mirafi® RS380i. For the pavement sections with pavers on AC pavement, the Mirafi® RS380i was again installed on compacted native soil. The thickness of Class II base ranged between 6 and 10 inches based on asphalt thicknesses of 3 and 4 inches. Therefore, for the AC pavement, the contractor was able to reduce required Class II base section by 2 inches which resulted in a cost savings.



Project site native subgrade preparation.



Placing Mirafi® RS380i over native soil and applying base material over Mirafi® RS380i.



Placing Mirafi® RS380i over native soil and applying base material over RS380i.

THE PERFORMANCE

The inclusion of Mirafi® RS380i high strength woven geosynthetic to the structural section of the parking lot improvements resulted in a cost savings for the Rancho Santiago Community College District. This cost savings was associated with reduced aggregate base requirements that avoided relocation of shallow utilities and faster compaction, which expedited construction. In addition, the new pavement structure will require less maintenance as it will be less susceptible to cracking and failures because of the subgrade reinforcement, separation, confinement and filtration associated with Mirafi® RS380i, the superior geosynthetic.



Compacting base material over Mirafi® RS380i.



Completed asphalt parking area at Santa Ana College.



Completed asphalt parking area at Santa Ana College.

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365 South Holland Drive Tel 800 685 9990 Fax 706 693 4400
Pendergrass, GA 30567 Tel 706 693 2226 www.mirafi.com



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