



Case Study

application Reinforcement & Drainage
location Worcester, MA
product Mirafi® RS380i & S800

job owner Worcester Polytechnic Institute
engineer Symmes Maini McKee Architects, JJA Sports, VHB Engineering
contractor Gilbane Building Co., Marois Brothers, New England Liner
date of installation 2012 - 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

In recent years student enrollment at Worcester Polytechnic Institute (WPI) has increased and thanks to the success of the WPI varsity athletic program, participation in athletics has increased over 60%. Due to this increase, the school was challenged to build several new athletic fields and at the same time increase parking capacity to accommodate the growing number of students. WPI was also planning to increase the number of large scale events on campus such as sporting events, robotics competitions, admission open houses, career fairs and alumni events without losing usable space on campus.

In addition, WPI's Board of Trustees wanted the project to be sustainable and as environmentally compliant as possible.

THE DESIGN

In order to address the shortage of both parking spaces and athletic fields, it was decided that WPI would build the first 'Rooftop Field' in Massachusetts atop a new parking garage. Although parking garages are no longer eligible for LEED certification, this new combination facility will be a sustainable building with features such as stormwater management, energy efficiency, electric charging station and the use of recycled materials. Most importantly, the project makes a sustainable statement that the land is being used for two purposes under one footprint.

The completed facility provides ample parking with a rooftop athletic field to be used for softball, soccer, field hockey, lacrosse, rugby and a variety of other recreational activities. Once the 534 space parking structure was completed, construction of the 'Rooftop' synthetic athletic fields began.

THE CONSTRUCTION

First, a PVC geomembrane was placed over the concrete roof deck to provide waterproofing and steer stormwater to the proper drainage outlets. TenCate Mirafi® S800 nonwoven polypropylene geotextiles were then placed directly over the membrane to provide cushioning and protection. Then, a lightweight plastic air drainboard approximately 2" thick was placed on top of the Mirafi® S800. The drainboard proved a thinner and more lightweight alternative to drainage stone while keeping the synthetic turf free draining and dry. The drainboard was covered with Mirafi® S800 to provide a drainage layer. TenCate Mirafi® RS380i* woven geosynthetic was placed and 6" of 1" < stone was placed on top of the geosynthetic. Finally, the synthetic turf field was placed on top of the stone.



Mirafi® RS380i is laid out and overlapped prior to aggregate placement.



Placement of 1" < stone over layers of Mirafi® RS380i and S800 geotextiles.

Mirafi® RS380i provided superior separation and drainage to accommodate for stormwater infiltration and also provided a reinforcement layer which considerably reduced the aggregate thickness to support the field turf. This also reduced the overall weight of stone on the rooftop which provided significant cost savings to WPI.

THE PERFORMANCE

Thanks to the innovative products provided by TenCate Geosynthetics, WPI was able to construct a first class athletic field in less time at considerable cost savings

Currently, WPI athletes have the first of its kind sports field in Massachusetts that they will be proud of for years to come, while also providing plenty of parking for their spectators.



Placement of 1" < stone over layers of Mirafi® RS380i and S800 geotextiles.



Finished rooftop field.

*Patent Pending

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