

**Research Type:** Full Scale Laboratory Cyclic Box  
Unpaved Road/Subgrade Stabilization

**Research Entity:** GeoTesting Express, Alpharetta, GA

**Products Tested:** Mirafi® RS580i  
Mirafi® HP570  
Mirafi® BXG12

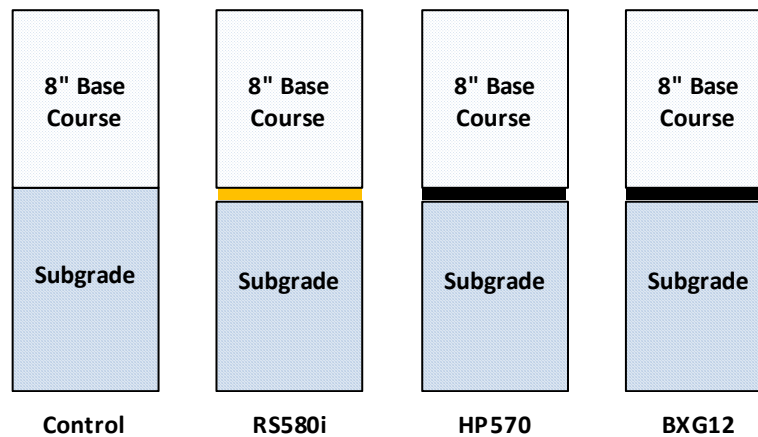
**Test Parameters:** Subgrade Soil CBR 1.8% Montana Clay  
Dense Graded Aggregate Base Course

**Research Purpose:** Testing was performed by GeoTesting Express in Alpharetta, GA in the large cyclic box located in their laboratory to determine the performance characteristics of TenCate Mirafi® RS580i, HP570 and BXG12 in soft subgrade soil conditions.



**Procedure:** Test sections were constructed in a 6.5' (2 m) X 6.5' (2 m) X 5' (1.5 m) deep test box as shown above. A steel plate measuring 12" (300 mm) in diameter was placed on a rubber pad to simulate wheel loads that provide a more uniform contact pressure on the test section surface. The applied loads and load frequency simulate a 9 kip wheel load or an 18 kip axle load. The maximum applied load applied by the steel plate was 8.2 kips (36 kN), resulting in a pressure of 72.5 psi (500 kPa). Four separate test sections were built in the box. The first was a control section with 8" (200 mm) of compacted aggregate and contained no geosynthetic reinforcement. The following four also had 8" (200 mm) of base course, but in addition had a layer of geosynthetic reinforcement consisting separately of Mirafi® RS580i, HP570 or BXG12. The sections were each loaded separately to record the number of cycles needed to obtain 1" (25 mm), 3" (75 mm) and 4" (100) of rut depth.

## Test Sections



**Results:** Measurements were taken to determine the amount of cycles needed to reach pre-determined rut depths. Each of the geosynthetic reinforced test sections outperformed the control section with TenCate Mirafi® RS580i significantly outperforming all the other geosynthetic reinforced test sections.

Section	Number of Cycles		
	1" (25 mm)	2" (50 mm)	3" (75 mm)
	Rut Depth	Rut Depth	Rut Depth
Control	1	3.7	4
Mirafi® RS580i	4	52	156
Mirafi® HP570	3.3	24	59
Mirafi® BXG12	2.6	16	36

**Conclusions:** Past research has demonstrated that geosynthetics containing the combination of high tensile modulus, high permittivity, high coefficient of interaction and the ability to provide separation of the subgrade from the base aggregate, will result in superior performance in roadway reinforcement applications. Mirafi® RS580i is an engineered geosynthetic that was designed to maximize all four of these key characteristics and thus improve performance over previously available geosynthetics. Although all the geosynthetic reinforced sections provided a considerable benefit, the unique combination of the key properties that are enhanced in the Mirafi® RS580i resulted in superior performance that can result in significant savings in the both the short term and long term life of a roadway.