

SUBGRADE STABILIZATION, GAINESVILLE, FLORIDA, USA

Constructing hurricane-proof roads in flood prone areas with MIRAFI



Industry: Transportation
Application: Subgrade Stabilization
Location: Gainesville, Florida, USA
Product: **MIRAFI® RS580i**

Challenge

Environmental & Geotechnical Specialists (EGS) performed the geotechnical design and recommendations for the roadway reconstruction. Borings indicated that silty fine sands with organics and groundwater were located between 2 and 7 ft (0.6 and 2.13 m) below the roadway surface. Additionally, high fine content of the subgrade made stabilization extremely challenging.

Overview

On the south side of Gainesville, Florida, U.S. Route 441 runs through Paynes Prairie Preserve State Park. This 2.5 mile (4 kilometer) section of roadway is surrounded by swamp land, and standing water is common. The ground water table is very high, and this portion of the roadway commonly floods after large storm events. Due to the rapid rise and fall of groundwater, fines and organics have mixed into the roadway base, resulting in ongoing maintenance issues. In 2017, this section of U.S. 144 was again flooded during Hurricane Irma, leaving severe damage to the roadway. The Florida Department of Transportation (FDOT) wanted a solution to reconstruct the roadway that would provide long-term performance.

Since reopening, the highway has endured multiple hurricanes and flood events, without requiring maintenance or repair.



CASE STUDY

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Solution

The design for the reconstructed roadway consisted of removing the existing asphalt and roadway base, with 105,000 yd² (87,793 m²) **MIRAFI RS580i** placed directly on the exposed subgrade. No other subgrade stabilization methods were used. After the placement of the **MIRAFI RS580i**, 11 in (28 cm) of graded aggregate base was placed and compacted. The final step in the design involved placing the asphalt.

The reconstruction was completed in December 2021. Since reopening, the highway has endured multiple hurricanes and flood events. The high flow rate of **MIRAFI RS580i** and its ability to provide separation, has prevented fines and organics from contaminating the roadway base. The roadway continues to perform well without requiring maintenance or repair. To date, this is the largest FDOT installation of the RS*i* material.



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