CASE STUDY

SOLMAX

SUBGRADE STABLIZATION, GAINESVILLE, ALACHUA FL

Roadway Reconstruction

Industry: Roadway Infrastructure
Application: Subgrade Stabilization
Location: Gainesville, Alachua County, FL
Product: **MIRAFI®** RS580i

Overview

On the south side of Gainesville, FL, U.S. 441 runs through Paynes Prairie Preserve State Park. This 2.5-mile (4 km) 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 rapid rise and fall of the ground water, Rapid rise and fall of ground water has caused mixing of fines and organics into the roadway base, causing continual maintenance headaches. In 2017, this section of U.S. 144 was again flooded during Hurricane Irma, leaving severe damage to the roadway. The FL Department of Transportation (FDOT) wanted a solution to reconstruct the roadway that would provide long-term performance.

When Hurricane Irma flooded parts of U.S. 144 in FL, FDOT needed to perform a total roadway construction.

Challenge

Environmental & Geotechnical Specialist (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 feet below the roadway surface. Additionally, high fine content of the subgrade made stabilization extremely challenging.

Solution

The design for the reconstructed roadway consisted of removing the existing asphalt and roadway base, with 105,000 sy (87,793 sm) MIRAFI RS580i placed directly on the exposed subgrade. No other subgrade stabilization methods were used. After the placement of the RS580i, 11 inches (28 cm) of graded aggregate base was placed and compacted. The last part of the design included the placement of the asphalt.

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