



Case Study:

# Eagles Canyon Raceway

Subgrade Reinforcement with Mirafi® H<sub>2</sub>Ri

Decatur, TX



# Eagles Canyon Raceway

Subgrade Reinforcement with Mirafi H<sub>2</sub>Ri

Project Date:

Engineer/Architect:

Contractor:

**November 2018**

**Brazos Environmental**

**Reynolds Asphalt**

Project Goals and Specs:

**Provide a long-term solution to address pavement distress caused by saturated soils and groundwater seepage.**

## Problem

The original raceway was constructed in the mid 1980's. New ownership desired to reconstruct the aging raceway pavement system, as well as add turns and length to the formula one type raceway. The track was constructed over expansive soils which caused visual signs of distress at the pavement surface. Groundwater seepage due to shallow bedrock was also discovered in many areas, which further impacted the poor pavement performance.

## Site Conditions

Severe cracking of the existing pavement existed throughout the site. It was determined that the cracking was likely due to construction of the pavement over moisture sensitive soils (expansive clays) and the presence of fluctuating groundwater levels and capillary action. As constant water seeped into the structural section of the pavement, varying levels of moisture of the expansive clays cause the soils to expand and contract at different rates which cause volume change induced stresses at the pavement surface. The layout of the raceway, including numerous turns and elevation challenges posed additional challenges. The solution had to be flexible to work around the various site conditions.

## Identified Issues and Constraints

The original project pavement design consisted of cement stabilized subgrade to treat the existing subgrade with CBR=1.5%. In addition, the section included 8 inches of flexbase and 4 inches of asphalt. The project team wanted to consider alternate stabilization for the project since the constructability of the cement stabilized base during saturated conditions would be problematic. Considering a high strength geotextile like H<sub>2</sub>Ri also speeds up construction schedule as there is no cure-time required.

### ★ Solutions / Final Application / Results

The project team was able to eliminate the need to cement stabilize the subgrade and installed a geosynthetic reinforced pavement with Mirafi H<sub>2</sub>Ri, a high strength, moisture-management geotextile, without adding any additional thickness to the original section which included 8" of flex base and 4" of asphalt. Mirafi H<sub>2</sub>Ri provides both mechanical stabilization (through friction) and hydraulic stabilization through enhanced lateral drainage. As the geotextile continuously pulls moisture out of the pavement section, even in unsaturated conditions, this solution is a long-term defense against the problematic seepage.

The engineer was familiar with the Mirafi subgrade enhancement products from previous projects. Ultimately, the owner decided to deploy Mirafi H<sub>2</sub>Ri for the subgrade reinforcement and the management of groundwater.

Moisture Management / Enhanced Lateral Drainage - wicking nylons are incorporated into the geotextile during the manufacturing process, which adds the unique ability to laterally remove water from both saturated and unsaturated subgrades. For moisture sensitive soils, such as expansive clays, the ability to remove and normalize (reduce the spread over a large area) the moisture contents in the subgrade decreases permanent deformations at the pavement surface.



#### Optimization Highlights

**This Mirafi H<sub>2</sub>Ri solution eliminated the need to install a more expensive and invasive groundwater drainage system. The Mirafi H<sub>2</sub>Ri moisture management system provides a long-term solution to assist in keeping groundwater out of the pavement system.**

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