

CASE STUDY

Eagles Canyon Raceway

Decatur, Texas



PROJECT OVERVIEW

PRODUCT:

Mirafi H2Ri

ENGINEER:

Brazos Environmental

CONTRACTOR:

Reynolds Asphalt

CHALLENGE:

The original raceway was constructed in the mid-1980s. 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.

SOLUTION:

The project team was able to eliminate the need to cement and stabilize the subgrade. It installed a geosynthetic reinforced pavement with Mirafi H2Ri, 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 H2Ri provides both mechanical stabilization (through friction) and hydraulic stabilization through enhanced lateral drainage.

PROJECT GOALS:

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

SITE CONDITIONS:

Severe cracking of the existing pavement existed throughout the site. It was determined that the cracking was likely due to the 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.

CONSTRAINTS:

The original project pavement design consisted of a cement stabilized subgrade to treat the existing subgrade with CBR=1.5%. In addition, the section included 8 inches of flexible 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. A high-strength geotextile like H2Ri also speeds up the construction schedule as no cure-time is required.

RESULTS:

The engineer was familiar with the Mirafi subgrade enhancement products from previous projects. Ultimately, the owner decided to deploy Mirafi H2Ri 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 remove water from both saturated and unsaturated subgrades laterally. 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 H2Ri solution eliminated the need to install a more expensive and invasive groundwater drainage system. The Mirafi H2Ri moisture management system provides a long-term solution to assist in keeping groundwater out of the pavement system.

For more information, ask an expert: info@ferguson.com