YALE DETENTION POND SLOPE

HARRIS COUNTY FLOOD CONTROL DISTRICT, TEXAS

MKB Stormwater Innovation

Application: Slope Stabilization
Product: TMax-3K + Anchors

Site Issues: Sandy Soils • Flood Control • Stormwater Pond • Additional Factor of Safety Required • Collaboration for Solutions

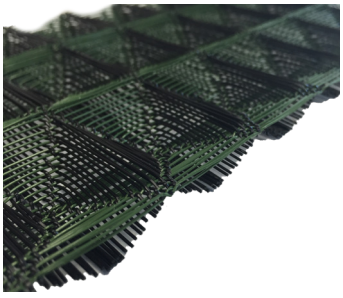
Problem: Harris County Flood Control District (HCFCD) has historically relied on hard armor solutions such as rock riprap and concrete for flood control and channel stabilization projects throughout the Houston area, but were open to alternate vegetated solutions.

Geotechnical evaluations determined that while the existing slope remained stable under dry conditions, saturated soil conditions reduced the factor of safety below acceptable design criteria. The initial solution considered by the project team involved reconstructing the slope as a mechanically stabilized earth structure, requiring extensive excavation, geotextile reinforcement, and reconstruction. This option carried an estimated cost exceeding $1 million and fell outside the project's budget constraints.

Solution: Harris County engineers, a third-party consulting engineer, the regional distributor, and the MKB engineering team worked collaboratively to develop an alternative Turf Reinforcement Anchor System. Using advanced slope stability modeling with Rocscience Slide and detailed anchor pullout analyses based on site-specific soil conditions, the team engineered a solution capable of achieving the required saturated-condition factor of safety of 1.3.

The design process involved multiple in-person and virtual meetings over several months, with extensive collaboration between all stakeholders to refine the design and validate performance assumptions. Upon completion of the engineering and review process, the project was successfully bid and constructed. The newly installed TMax-3K HPTRM and 9' earth anchors faced immediate significant rainfall events and fully vegetated ahead of schedule.

Result: The final solution provided Harris County with a cost-effective alternative to hard armor slope reconstruction while delivering the required long-term stability and erosion protection. The project demonstrated how innovative vegetated reinforcement systems can provide substantial cost savings while meeting stringent geotechnical design requirements for flood control infrastructure.



PRODUCT HIGHLIGHTS

- TMax-3K stands out for its superior strength, lower strain values, and an open matrix design that fosters vegetation growth.
- This technology has been proven effective in both laboratory and challenging field conditions, offering unmatched hydraulic performance and resistance to deformation.
- Low-elongation strength and ultimate strength make it ideal for slope stability and surface reinforcement.

MKB Stormwater Innovation

mkbcompany.com | 888-578-0777