CASE STUDY

Lemm Gully Slope Stabilization

Houston, Texas

FERGUSON WATERWORKS

PROJECT OVERVIEW

PRODUCT:
Presto GEOWEB

ENGINEER:
VOGT Engineering

CONTRACTOR:
Triple J Enterprises

CHALLENGE:

This particular bend of Lemm Gully was not far from a lift station and was quickly deteriorating around a main sanitary line. Montgomery County wanted minimal impact on the geometry of Lemm Gully, and excavation was limited due to the sanitary line, which cut through the center of the project. The owner preferred a vegetated option for reinforcement and erosion control on the banks.

SOLUTION:

The project team presented two final options to stabilize the slopes. The first option was a gravity wall consisting of aggregate-filled gabion baskets tied back by reinforcing steel mesh into the embankment. The second option was a vegetated MSE wall consisting of GEOWEB, reinforced by uniaxial geogrid into the embankment. Both designs proved to be well suited for the application at hand, providing flexibility to build around the sanitary line, as well as the ability to construct the wall with small to medium-sized equipment.

PROJECT GOALS:

Stabilize and reinforce the eroding banks around a bend of Lemm Gully near a sanitary line and apply erosion control measures to protect against a 100-year storm event.

SITE CONDITIONS:

Limited site access prevented any industrial-grade equipment from entering the site. The soils were moisture-sensitive and, if left exposed to the elements, were prone to washout during storm events throughout the construction phase.

CONSTRAINTS:

Due to the steep side slopes and impending erosion from the following major storm event, the owner needed a solution that would last. The project team wanted to present multiple MSE options to the owner due to the project's unique constraints. A combination of the critical slope angle of the banks, the soft belly of the channel, and a sanitary line splitting the slopes forced the project team to consider multiple alternative options.

APPLICATION:

After reviewing both options for slope stabilization, the GEOWEB Vegetated Retaining Wall System was selected to maintain a permanent, green aesthetic and restore Lemm Gully to its original state. The GEOWEB wall solution offers a terraced structure so vegetation can effectively grow within each of the cells—much like a series of isolated planter beds. Uniaxial geogrid was used to reinforce the system's face, providing adequate load—-distribution behind the GEOWEB System. Strips of turf reinforcement mats were used to protect the soil within each of the exposed GEOWEB-facing units until vegetation was established. The project site's challenging conditions proved to be no match for the flexibility and ease of construction that the GEOWEB Vegetated Retaining Wall System provided.

RESULTS:

The GEOWEB System's ability to confine material within each of the system cells allowed the contractor to effectively compact the face units of the wall as he worked his way up, constructing the system from the bottom of the slope to the top. The soft belly of the channel was combatted by burying the first few lifts of the GEOWEB System to establish a firm footer for the wall. Once vegetation was established, the root system grew through the face cells to produce an interconnected, monolithic matrix of roots. In turn, this will mitigate long-term soil loss and provide additional surficial reinforcement for the banks. Upon final application, a concrete apron was poured upstream and downstream, vertically along the slopes, to ensure high-velocity events have no chance of undermining the system.

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

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