

Protecting New Orleans against future storms

New Orleans, USA

The use of Colbondrain CX1000 enabled the strengthening of levees in a very marshy area. Consolidation was delivered well within the scheduled time frame. Colbondrain CX1000 was chosen for its high tensile strength, allowing fast installation.



Project owner
Municipality of New Orleans

Product
Colbondrain CX1000

Function
Dewatering groundwater at greater depth to increase the bearing capacity of the soil.

Contractor
US Wick Drain, Leland, N.C.

Volume
2,750,000 linear feet

Challenge

It's an extreme challenge - to shore up, stabilize, and add height to huge earthen levees in the Greater New Orleans Hurricane and Storm Damage Risk Reduction System. But the pay-off is priceless - these reinforced levees will help prevent future disasters from flood waters by hurricanes like Katrina.

Solution

Colbondrain CX1000 was selected for the drainage application. Colbondrain is a 100 mm wide prefabricated vertical drain which includes an extruded polymer core fully

covered with a filter fabric. Its tensile strength is higher than most wicks and the fabric is thermally bonded to the polymer core in a unique way. The core itself is distinctive because of its typical corrugated cross section, allowing fast water discharge. Altogether it's a thoroughly tough and durable composite with excellent drainage capacities.

Benefits of the solution

The project led by the US Army Corps of Engineers and its contractors is complex, involving rapid consolidation and increased strength on more than 11 kilometres of earthen levees in record time. This critical goal to achieve prior to the



The so-called "anchor-plate" is wrapped around the end of the strip to prevent the strip from being pulled up after pushed into the weak soil.



Up to 5 rigs could work simultaneously.



Little flags mark the installation location.



Well packed rolls are easy to handle.



Non-woven geotextile layer is installed to separate the sand and crushed stone layers.

next hurricane season, whilst dealing with very weak soils was the installation of Colbondrain CX1000.

Installation benefits

One important factor in their success was Colbondrain CX1000. This Prefabricated Vertical Drain provides conduit for a faster pore water dissipation, a major consideration working in soft marshy soils. Colbondrain accelerates consolidation and settlement time dramatically, allowing the levees to be built much faster. Consequently, Colbondrain speeds up projects.

Near Louisiana, more than 2.750.000 linear feet of Colbondrain now inhabits more than 300.000 holes

throughout the LPV 109 Levee project, absorbing moisture that consolidates the soil to keep the levees stable. This mammoth installation is said to be the third largest per linear meters of PVD in the US to date.

Five stitchers (large drain rigs) were used; a metal plate holding the wick was pushed through the soil by a mandrel to anchor it at predetermined depths. Cone penetrometer testing was performed to determine the wick depth.

Results

The New Orleans levees involved in this project measure 70 to 80 meters wide, with elevations ranging from about 5,5 to 7,5 meters, and run for approximately 11 kilometres.

Reinforcing and adding height to these earthen levees is difficult, especially in moisture dense swampy areas. The process is multi-layered, using a sand blanket, geotextile fabrics and rock and prefabricated vertical drains.

It began with geotechnical design, specs and plans created by URS Corporation staff. Taken from there, a geotextile fabric was placed, and a sand blanket 60 to 90 centimeters thick to form the base. The layers above the sand blanket included the top of the wick drains, followed by separation fabric, gravel, more separation fabric and clay.

Product used



Colbondrain[®] CX1000

Prefabricated vertical drainage strip (PVD) to accelerate the consolidation of the soil.