

STONEBROOK PARKWAY OUTFALL DITCH FRISCO, TX, USA

STREAM BANK PROTECTION

Products: Gabions, Gabion Mattresses, MacTex®

Problem

The City of Frisco needed to build a bridge over Stewart Creek and its tributary in order to extend Stonebrook Parkway. The tributary intersected Stewart Creek at 90 degrees and was just upstream of the proposed bridges. The tributary needed to be enlarged because it could not contain the 100 year flood water. The City and the designer decided to re-route the tributary to the downstream side of the proposed bridges. A smooth radial curve was designed for the tributary into Stewart Creek. Due to evidence of unstable creek banks and stream bed erosion along the creek, this new confluence of the creek and tributary needed to be protected with hard armament to prevent future erosion problems.

Solution

Maccaferri products were chosen for this project for three main reasons. The first was the strength and flexibility of Maccaferri's products. The second was that Maccaferri was able to provide the engineer with a cost effective engineering proposal. The third was due to the interpersonal relationship between the local Maccaferri office and the engineering firm, owner, and contractor.

The solution used was a gabion wall on the opposite bank, where the tributary empties into the creek to armor that bank from the erosion of water coming into the creek. Gabion Mattresses were also used on the creek bank, opposite of the wall, to armor the bank from the natural flow of the creek. Lastly, 9' X 3' gabions were used on the tributary bed, and a concrete toe was used on the channel bed. Fabric was used behind the gabions to prevent small soil particles from migrating through the gabions. Stainless steel hog rings and PVC lacing wire were used to assemble, join, and close the gabions together.

The gabion wall had to be designed to curve back into the backfill on the upstream side to prevent any scour erosion at the end of the gabion, and to save costs on making the wall longer than could be funded and permitted.

Client

CITY OF FRISCO, TEXAS

Main Contractor

MASSANA CONSTRUCTION, INC.

Designer

HNTB CORPORATION

Products Used

GABIONS, GABION MATTRESSES, MACTEX®

Date of Construction

JANUARY 2013 — MARCH 2013



Gabion Mattresses and a Gabion wall to prevent erosion



Installed Gabion Mattresses along the bank

MACCAFERRI



Gabion wall protecting the bank and Gabion Mattresses protecting the channel bed



The Gabion wall already accepting vegetation



Curved Gabion wall following the bank



Gabion Mattresses used for hard armor

MACCAFERRI

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