THIS DESIGN MAINTAINED THE NATURAL RIPARIAN HABITAT WHILE STABILIZING THE BANKS OF A TIDALLY-INFLUENCED BAYOU USING ENVIRONMENTAL FRIENDLY, BIO-ENGINEERING SOLUTIONS; CREATING A NICE AMENITY LAKE, TRAIL, AND BRIDGE, AND INCREASING SUSTAINABLE, HIGH QUALITY WETLANDS IN THE PROJECT AREA.

Robinson Bayou Bank Stabilization

BACKGROUND

Robinson Bayou is a natural, tidally-influenced waterway located in League City, Texas, that flows into Clear Lake and then to the Galveston Bay. Heavy rain events were causing significant bank erosion along Robinson Bayou from Abilene Street to FM 270. The erosion threatened adjacent commercial and residential developments.

In addition, the erosion had exposed the root systems of large trees along the bayou, increasing concerns that the trees would fall into the bayou and create a dam at the FM 518 and FM 270 bridges. The City sought a solution to address these problems while retaining the natural aesthetic appeal of the riparian habitat along this reach of the bayou.

PROJECT APPROACH

The City of League City selected Huitt-Zollars to provide professional engineering and surveying services to develop eco-friendly solutions to mitigate the bank erosion problems along Robinson Bayou from 100 feet upstream of Abilene Street downstream to the FM 270 Bridge.

Huitt-Zollars conducted preliminary engineering work including field and geotechnical investigations, topographic surveys, and identification of trees which should be protected under the City's Tree Protection Plan.

A report describing the results of the investigations and providing three conceptual designs with cost estimates was submitted to the City. Huitt-Zollars prepared final design documents based on the plan selected by the City, coordinated the plan with the US Army Corps of Engineers (USACE), Texas Department of Transportation (TxDOT), and General Land Office of Texas (GLO), and obtained required permits. As part of the USACE Permit, Huitt-Zollars utilized USACE's Stream Assessment Tool (SAT) to determine impacts and stream mitigation requirements, the first time this tool had been used in the Galveston District.

A tree preservation plan was also prepared and submitted to the City for approval. Huitt-Zollars also provided bidding and construction phase services.

disciplines + services
hydraulic & hydrologic analyses
civil engineering
bridge engineering
trails & greenspace
wetland creation
surveying
geotechnical
USACE permitting

client
John Baumgartner
City of League City

location
League City, Texas

Winner of the 2015 Project of the Year Award from the American Public Works Association, Texas Chapter

Innovative bio-engineering bank stabilization systems were used to protect trees and control the eroding banks of the bayou.

disciplines + services

hydraulic & hydrologic analyses
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ADVANCE**DESIGN** SOLUTIONS

Huitt-Zollars developed a bio-engineering design solution which preserved the natural riparian habitat of the bayou, enhanced the environment, and served the needs of the community.

Huitt-Zollars' design included a pedestrian trail and bridge over Robinson Bayou that connects the City's trail system to the project area. This provides neighborhood residents with access to hiking and biking trails for recreational use and easy access to commercial development along the bayou.

During the initial investigation, Huitt-Zollars inspected a large scour hole just downstream of Abilene Street. High-velocity flows over an existing drop structure were causing the scour. Huitt-Zollars determined that the City owned the property adjacent to the bayou in the area of the scour hole. The design team saw the potential use of this land as an opportunity to widen the bayou, which would slow the flood flows from the drop structure, thereby reducing further scour while at the same time creating an amenity for fishing and recreation. The pedestrian trail encompassed the new pond, giving the citizens easy access.

The project design involved the use of several innovative bank stabilization systems. In addition to standard earthen bank stabilization, these systems included the use of riprap, coir logs, geoweb walls, rock gabions, and timber poles for selected tree protection and wetland creation. This integrated bio-engineering solution maintains the natural riparian habitat and wetlands along the bayou while protecting the community from property damage associated with continued erosion and flooding. Plus, Huitt-Zollars required the placement of the rocks in the gabions to have their flat sides facing out. This resulted in a nice seating area for the local patrons of a BBQ restaurant to sit on the gabions while enjoying their lunch.

Huitt-Zollars, utilizing their stormwater drainage expertise and understanding of the local community, partnered with the City and local regulatory agencies to implement an innovative, eco-friendly design solution. This has ultimately increased the amount of sustainable wetlands in the Robinson Bayou area and has created sustainable benefits. Huitt-Zollars also led public meetings on the project to discuss it with local residents and business owners.