

Castlewood Subdivision Stormwater Drainage Design



The Castlewood subdivision is located in northern Harris County along one of the primary streams of the Greens Bayou Watershed. The subdivision is a well-developed, large-lot neighborhood with rural features and contains both residential communities and commercial properties. Part of Castlewood lies within the Federal Emergency Management Agency 500-year floodplain and experiences flooding issues during larger storm events.

CivilTech, a Woolpert Company, was contracted by Harris County to provide a drainage analysis for the subdivision, conduct a drainage impact analysis for the tributary stream, design an underground storm sewer system to replace existing roadside ditches, and design concrete curb and gutter roadways to replace existing asphalt pavement.

The project began with a drainage analysis to identify existing drainage areas and runoff patterns, stormwater conveyance inadequacies, and the impacts of those inadequacies. The analysis resulted in a no-impact determination to the channel.

CivilTech also conducted an engineering study to determine the specific improvements needed and develop the design for these improvements. Ultimately, the project included:

- Replaced existing asphalt roadway with concrete curbs and gutters
- Replaced roadside ditches and culverts with an underground storm sewer system outfalling into a Greens Bayou tributary
- Designed concrete box culvert-style storm sewers and varied inlets
- Routed extreme storm event drainage to two locations
- Replaced existing asphalt driveways with new concrete driveways
- Added reinforced concrete sidewalks and ADA-compliant ramps

Finally, the team coordinated the relocation of existing private utilities, including gas, electric, water and telecom.

CLIENT

Harris County Engineering Department

LOCATION

Harris County, TX

SERVICES

- Drainage analysis
- Civil engineering
- Public outreach
- Utility coordination
- Construction administration