



Owner: Pulte Homes, San Antonio, L.P.

Site Contractor: Yantis Company | John Yantis, President (210) 653-9336

Speciality Engineer: Cutler-Gallaway Services, Inc. | Earl Cutler, P.E. (210) 496-3326

Completion Date: September 2001 | Contract Amount: \$133,400.00 | Maximum Pile Load: 35 kips

PROJECT SUMMARY

Twin Box Culverts

Project Description: In September 2001, Power Lift was contacted by John Yantis, President of Yantis Company regarding raising two (2) twin box culverts. The Yantis Company is a large site contractor based in San Antonio, TX that performs all phases of site work on new residential and commercial developments. Upon contacting Power Lift, Mr. Yantis advised that the civil engineer had somehow missed the benchmark elevation and two (2) twin box culverts being constructed in the Ratama Ridge subdivision had been constructed at an incorrect elevation and were in need of raising or demolition/reconstruction.

Subsurface Conditions: This area of San Antonio is known for very stiff, deep, highly expansive clays, underlain by a limestone formation. Most of the site had already been prepared by placement and compaction of 4' of select fill.





PROJECT SUMMARY — TWIN BOX CULVERTS (CONTINUED)

Design Details: When questioned what amount of lift would be needed to correct the culverts' elevation, Mr. Yantis replied, "One needs to be raised about 3' and the other about 3.5'." He advised, after approaching several other underpinning contractors, that he was told Power Lift was the only company in the area with a multi-point lifting system capable of providing such a lift.



Power Lift partnered with the specialty engineering firm, Cutler-Gallaway Services, Inc., to formulate a lifting plan for the structures. Upon learning of the City of San Antonio's requirement that the bottom of the box culverts could not be penetrated, Bill

McCown, President of Power Lift, conceived an idea of raising the structures from the perimeter. He discussed with Earl Cutler, P.E., of Cutler-Gallaway the possibility of installing piles around the perimeter and hanging the center wall of the twin boxes from a series of beams placed across the boxes in the transverse direction. Cutler sized the beams required to transfer the central load of the boxes to the outer walls and designed the required dowels and anchorage assemblies. Power Lift installed 24-3" O.D. Power Lift driven steel piles around each culvert and installed the required transfer beams supplied by Yantis. The piles were driven to depths of nearly 40' with ultimate capacities of 70 kips. Each pile was equipped with a 10'-3.5" O.D. stiffening sleeve to aid in lateral stability as the boxes were being raised.

Each box was raised to the required elevation as determined by the civil engineer and flowable fill was pumped under the boxes by Yantis Company. Power Lift's piles were then removed leaving the structures again bearing on grade and the remaining site work completed. The project was completed in two weeks, six weeks sooner than if the culverts had been demolished and rebuilt and at a cost equal to half the cost of demolition and reconstruction.