

Spring Growth at the Dallas Arboretum and Botanical Gardens

As spring has turned green and the gardens bloom and grow at the historic Dallas Arboretum and Botanical Gardens, additional growth is also happening as the Arboretum's new parking garage and pedestrian tunnel begin to take shape.

Last summer, the Arboretum secured the specific use permit (SUP) required to begin construction on an underground pedestrian tunnel beneath Garland Road. The tunnel at 20 feet wide, 13 feet high, and 155 feet long, was designed to be a connection that moves people between a multi-story, 1,200 space parking garage and the entrance to the Rory Meyers Children's Adventure Garden, which opened last September.

The SUP had to go before the City Plan Commission for approval just like a re-zoning request; however, no re-zoning was required for the property. The permit allows for one additional use for the property, which is the underground tunnel combination. The city controls Garland Road, also part of the Texas Department of Transportation (TxDOT) so

any proposed changes had to meet the approval of both.

Both the garage and tunnel are important issues that have created a great deal of debate in the community but John Armstrong, the Arboretum's Vice President of Property Development, said the Arboretum is desperate for additional parking space due to its continued popularity and growth.

The Arboretum is situated about 4.6 miles northeast of downtown Dallas and encompasses 66 acres of gardens, fountains, and trails and hosts more than 660,000 visitors annually. The property sprawls along the shoreline at the south-eastern edge of White Rock Lake, long considered one of Dallas' crown jewels. An area popular with runners, cyclists, picnickers, and hikers, the open land around the lake and Arboretum is also home to a large number of trees, flowers, and wildlife that are indigenous to North Texas and the area's natural rolling topography. Periodically groups will propose changes or additions to the area which are typically met with concern



A Brokk robotic excavator fitted with an Atlas Copco hoe ram was a primary piece of equipment in the construction of the tunnel.

from nearby residents as well as activists intent on preserving the area's natural resources. Therefore, the Arboretum had to apply careful consideration in the expansion of its parking areas and the methods used to do it.

Several factors came into play:

- A desire to solve the issue of limited parking availability at the Arboretum.
- The need to accommodate a projected growth in attendance expected from the new Children's Garden and overall growth in general attendance which has accelerated over the past several years.
- A lack of on-site land availability for use in building or expanding surface parking.
- The need for sensitivity to the surrounding areas.

To Bridge, to Cut or to Tunnel

The garage is ultimately being built across a major thoroughfare from the gardens that the Arboretum already owned. It was important to be able to move Arboretum patrons safely from the garage to the gardens and that would require the construction of a large bridge or tunnel. The pedestrian bridge idea was considered and, although it might have been a less expensive option, was eventually rejected in favor of the tunnel. The next major decision was how best to create the tunnel. One option would have been to dig an open trench across all six lanes of Garland Road; however, this is an already congested area where thousands of vehicles traverse each day. An open cut would have required a complete shut-down of traffic for an extended length of time. The other option was to tunnel beneath the road, which made the most sense after reviewing the findings of an extensive feasibility study.

Rogers-O'Brien, the general contractor on the job, has firmly established itself as an industry leader, providing a wide range of preconstruction and construction management services throughout Texas since 1969. They brought in AR Daniel Construction, Inc., to carve out

the raw tunnel. Upon its recent completion, the tunnel was turned over to Rogers-O'Brien to be finished out with waterproofing, electrical conduit, and an extensive drainage system.

AR Daniel Construction is a company with more than 35 years of experience in trenchless construction including horizontal earth boring, tunneling, shaft excavation, and pipe jacking. The team spent two and a half months on the construction of the 155 foot tunnel, digging through fault zones containing rock and layers of clay.

President and COO Art Daniel explained the concerns on the project and the sensitivity of the work zone.

"Both the city and TxDOT were concerned that the structural integrity of the tunnel be properly established and maintained as it went under a major roadway, as well as directly under a signal light and its foundation," Daniel said. "Also in the immediate area are two waterlines, two gas lines, and sewer lines and we had to run the tunnel underneath these."

Because of the advance planning and effort required to undertake such a major project, the tunnel construction has been a success. A primary piece of equipment used to create the tunnel was a Brokk robotic excavator fitted with an Atlas-Copco hoe ram, which is a hydraulically driven jack hammer. Its remote operation allowed the operator to remain at a safe distance away from vibration and falling debris. This tool would loosen fill from the tunnel which was removed with the use of a secondary mini excavator. In total, approximately 2,600 cubic yards or 5,500 tons of rock and clay were removed as the tunnel began to take its final shape.

"We have just gotten our portion of the project completed," Daniel said. "From there, Rogers-O'Brien will complete the remaining detail on the finish-out of the interior."

Both the garage and tunnel are slated for completion near summer's end, helping to alleviate the previous parking issues just in time for the Arboretum's busy fall season. ❖



The tunnel as construction progresses beneath the roadway.