



# LIGHTWEIGHT AGGREGATE SOLVES A DALLAS URBAN PARK'S UNIQUE DESIGN CHALLENGE

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## QUICK FACTS:

### Project:

Klyde Warren Park

### Location:

Dallas, TX

### Notes:

There are gardens for exploring, water features to admire and cool off in, a dog park, children's play area, shaded walking paths, a restaurant, performing stage, and expansive lawn areas for informal play. Site amenities feature seating, water fountains, security and architectural lighting, trash receptacles and sculptures.



**Designing an urban park in a downtown area is quite a challenge but constructing one over the sunken Woodall Rodgers Freeway demands more expertise, coordination and teamwork.**

The Klyde Warren Park was built over a three year period under the watchful eye of the City of Dallas, the Texas Department of Transportation, with signature design, engineering and construction firms participating.

The \$110 million venture was funded through a public-private partnership that included dollars from the 2006 Dallas City Bond Program, funds from the Texas Department of Transportation and the Federal American Road and Recovery Act, along with private donations.

## LIGHTWEIGHT SOLVES URBAN PARK CHALLENGE

The deck structure showing the channels created for utilities. The waterproof padding was temporarily held in place with sacks of expanded shale.

This mammoth undertaking has many benefits. It improves the connections between the Dallas Arts District and the Uptown neighborhood and enhances the environment with 5.2 acres of lush turf, gardens, trees and more. Not only will the park help cool this section of downtown but it will systematically filter and reduce all storm water within the property.

Over 37 native and adapted Texas plant species can be found on-site with over 300 trees providing needed shade and vertical scale. The trees have outstanding environmental benefits as estimated by the US Forest Service.

Expanded shale played a prominent role in the construction of Klyde Warren Park. It was specified to help reduce weight over the massive deck structure above Woodall Rodgers Freeway. Working from the deck up, expanded shale was applied as a lightweight engineered fill and drainage medium along with Styrofoam blocks. In combining these two materials, the engineers were able to mitigate the sloping fill requirement across the site (1.2 to 3.8 feet) while providing a structural, free draining base beneath the planting soils and park structures.

The expanded shale measured 63 pounds per cubic foot in this system, typically half the weight of a sand or gravel alternative. 3/8 inch expanded shale was applied as a lightweight aggregate base beneath the concrete promenades and decomposed aggregate pathways. When confined at the edges and lightly compacted, the expanded shale is able to distribute the loads over the entire surface at significant weight reductions.

There were special soil requirements for this project as well. Numerous factors had to be achieved,

including the weight, resistance to compaction, drainage and filtering quality, to the growing requirements of a diverse palette of trees, shrubs, ground covers and turf.

The final specifications called for a blend of 25% organic material, 50% expanded shale and 25% sand/soil mixture- and the installed depth ranged from 1.2 to 3.0 feet. Because these soils are porous and lightweight, it made for easy digging during the installation of plant material, irrigation, concrete footings and other site amenities.

Lastly, the large container plantings in the park also have their own soil mixture composed of 33% organic, 33% expanded shale and 33% sand. This lightweight blend promotes good drainage and fertility with the expanded shale being a permanent anchor for the network of plant roots. In all, approximately 17,000 cubic yards of expanded shale was used in the engineered fill and planting soils.



Trinity Lightweight is the largest producer of rotary kiln expanded shale and clay lightweight aggregate in North America and is a leading supporter of research, independent testing and field studies to improve the manufacturing process and expand the beneficial uses of the product.

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