A downtown park enhances both the natural and economic environments of a major city like Dallas. Building the new Klyde Warren Park over the downtown freeway loop, however, brought a unique set of technical challenges.

LIGHTWEIGHT SOLVES URBAN PARK CHALLENGE

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.

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

IMPROVING CONNECTIONS

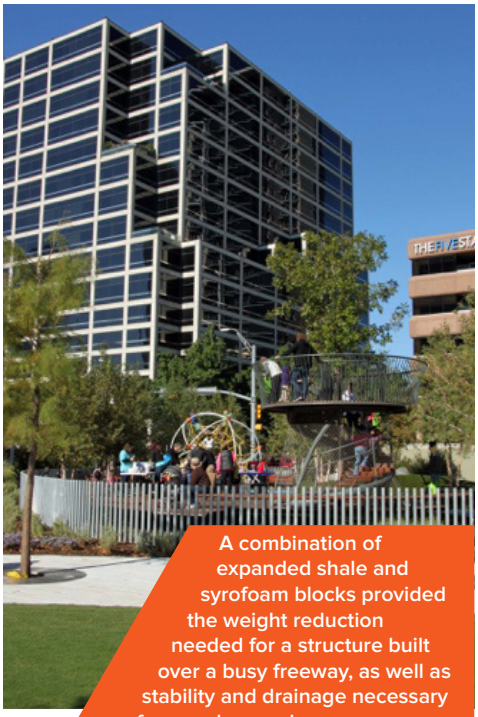
This mammoth undertaking has many benefits. It improves the connections between the Dallas Arts District and the Uptown neighborhood and enhances the environment with 5.2 acres of lush turf, gardens, trees and more.

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. Over a 50 year period, they will produce $700,000 worth of oxygen, $19,964,000 worth of pollution control, recycle $12,075,000 worth of water and control $10,062,500 dollars in erosion. On the economic level, it is estimated that over 1 billion worth of new development has occurred within a quarter-mile radius since the park construction was announced and best of all, the Klyde Warren Park will be financially self-sufficient while remaining a free amenity for the public's enjoyment.

SOMETHING FOR EVERYONE

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,



A combination of expanded shale and syrofoam blocks provided the weight reduction needed for a structure built over a busy freeway, as well as stability and drainage necessary for an urban park.

performing stage, and expansive lawn areas for informal play. Site amenities feature seating, water fountains, security and architectural lighting, trash receptacles and sculptures. The Muse Family Performance Stage adjacent to the Great Lawn accommodates 120 performers and is open on all sides. Programmed entertainment will include sponsored events and a variety of music festivals, student performances, jam sessions and concerts from the Dallas Symphony Orchestra.

The streets and frontage roads surrounding the park were enhanced to increase pedestrian, trolley and bicycle traffic flow and street level parking was included in select areas. The park has a 10,000 person capacity and is managed by the Woodall Rodgers Park Foundation with full-time security.

LIGHTWEIGHT PLAYS PROMINENT ROLE

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 considered, including weight, resistance to compaction, drainage and filtering quality, as well as 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.

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