

FUNCTIONAL TENSIONED SHADE SCULPTURE

Early 1900s towns in the U.S. Southwest sprung up like cacti wherever stagecoach stops seemed appropriate. Established in 1912, Tolleson, Ariz., is one of those stagecoach layover points, and like many American towns that predate the automobile, the transformation of the landscape by the mid-century interstate freeway system left its mark on this town too.

Tolleson, tucked into a far southwest corner of Phoenix, used to be the way people got in and out of Phoenix from Los Angeles via Van Buren Street. For decades, Van Buren was Tolleson's main through street, made into a five-lane highway in the 1960s to handle the steadily growing traffic before Interstate 10 was built about a mile north. After the Interstate, the diminished traffic flow opened an opportunity that has led to a four-year city redevelopment project, the Downtown Tolleson Redevelopment corridor, that has transformed the street into a mile-long pedestrian-friendly destination recently rebranded the "Paseo de Luces" (path of lights).

Urban renewal efforts include aggressive architectural improvements to the city's streetscape, sidewalks, landscaping, water features, lighting and gathering spaces. At the heart of the project, midway between 91st and 99th avenues, is an open greenspace and gathering area where a dramatic water feature and shade element are incorporated into the program.

Designed by International Tension Structures (ITS), Scottsdale, Ariz., this framed shade structure of gently arching beams spanning over the water feature, creates a focal point and memorable landmark for the community. A complex assembly of compound arching beams and intersecting tensioned



fabric panels work together in a dynamically lyrical composition. Eight rectangular columns, equally spaced around in a circle that surrounds the water pool, are canted out slightly, pointing skyward with angled tips like spears. Eight double-arching beams in pairs of two, each spanning more than 70 feet, cross in the center offset to create a square-sided opening directly above the pool. Tensioned fabric panels fit between each pair of beams to form a shape somewhat like a Maltese cross. Four triangular fabric panels converge on the center point beneath the square

PROJECT DATA

CLIENT

City of Tolleson, Ariz.

ENGINEER, DESIGN, FABRICATION, INSTALLATION

International Tension
Structures

FABRIC

White PVC-coated polyester,
Précontraint 502
by Serge Ferrari



opening where they attach to the bottom point of a flying mast that projects upward to create a high point enclosed with a fabric cone. This center cone rises to a height of 28 feet and with the dramatic LED lighting system on the structure makes it a beacon for the community gathering place.

The project faced several complex construction challenges for ITS, including compound arching beams, heavy structural steel members to carry the long spans, and rigorous modeling to ensure a secure and steady installation. “Every piece

of steel was modeled to develop their specific shapes,” says Jacob Schwartz, owner of ITS. “Due to the size of some of these bent steel beams, we had to have them rolled out of state and shipped in.”

The result is a structure that helps to define Tolleson, has created a popular and beautiful destination point and helped the community with its urban renewal and revitalization. The project received a 2015 IAA Achievement of Excellence award in tensile structures less than 600 sq m (6,458 sq ft) in size. —*BW*