

**2011
Design
Awards**

PROJECT Sam Houston Tollway Northeast Main Plaza and Exit Toll Plazas, Houston

CLIENT Harris County Toll Road Authority

ARCHITECT RdlR Architects

DESIGN TEAM Stephanie Giet; Rey de la Reza, FAIA; Lorie Westrick, AIA; Howard Merrill, AIA; Eduardo Marquez

CONTRACTOR SpawGlass Civil Construction

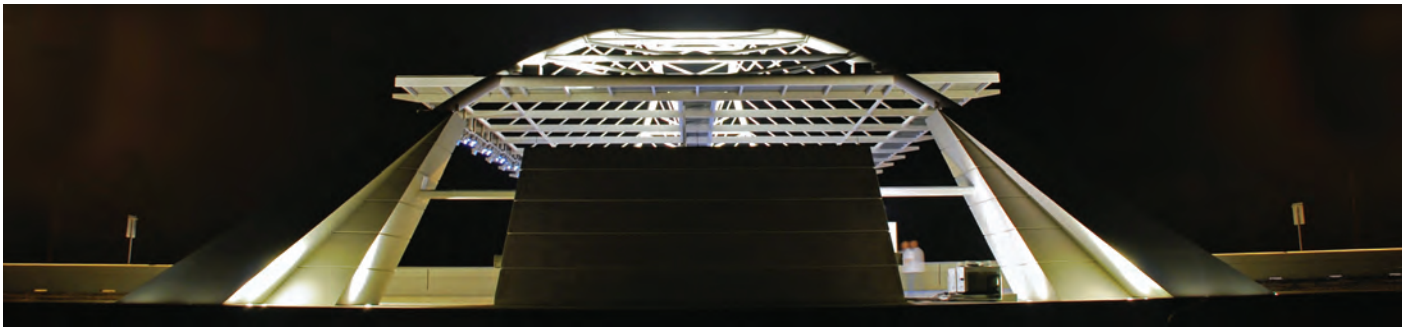
CONSULTANTS CobbFendley (project coordination, civil and toll infrastructure design, construction administration); LJA Engineering (structural); Ferguson Consulting (electrical); Advanced Technologies (MP); ATI-CM (cost estimating); BOS Lighting Design (lighting); Harris County Public Infrastructure Department Toll Road Section (owner rep); KBR (construction management); ETC (toll equipment)

PHOTOGRAPHERS Chad McGhee; Mark Gaynor



Sam Houston Tollway Northeast Toll Plazas

by JESSE HAGER





B RIDGES ARE A CHERISHED DESIGN PROBLEM. The clear span represents a common exercise for architecture students exploring essential concepts of structure, tension, and compression. Regrettably, architects are seldom commissioned to design a bridge project.

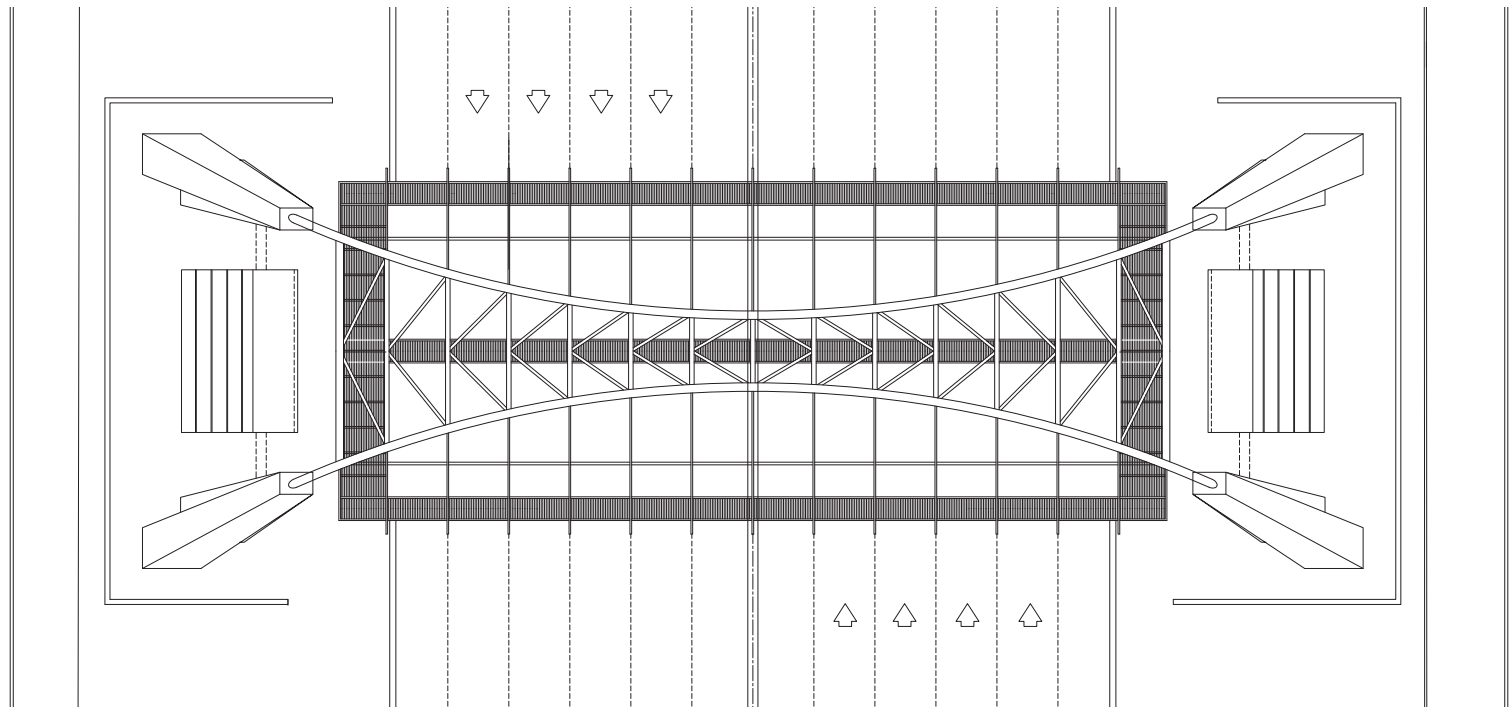
Fortunately for motorists along a 13-mile stretch of the Sam Houston Tollway, RdLR (formerly Rey de la Reza Architects) was presented the opportunity to design a series of bridge-like structures between U.S. 59 North and U.S. 90 East. The client, the Harris County Toll Road Authority, hired the firm because of its previous bridge experience including the successful “Houston Gateway” bridges over the Southwest Freeway. During schematic design, the toll road authority decided to abandon manned toll plazas on new road sectors and embrace state-of-the-art technology.

RdLR borrowed from the language of U.S. 59 bridges to conceive the project’s skeletal structure. The result is comfortably reductive. The design has the fluidity but not the unnerving dynamism of works by engineer-turned-architect Santiago Calatrava. While the structure conspicuously arches above from a distance, the road remains visually unobstructed so drivers aren’t prompted to slow down or stop.

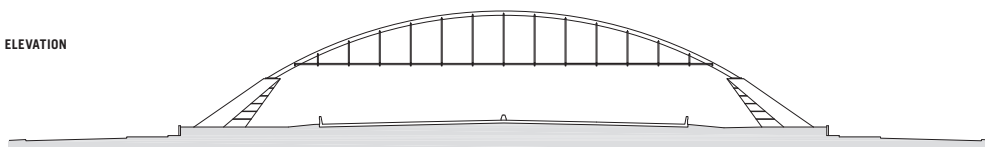
The project comprises seven separate components—six smaller exit plazas and one primary plaza that encompasses all 12 lanes of the



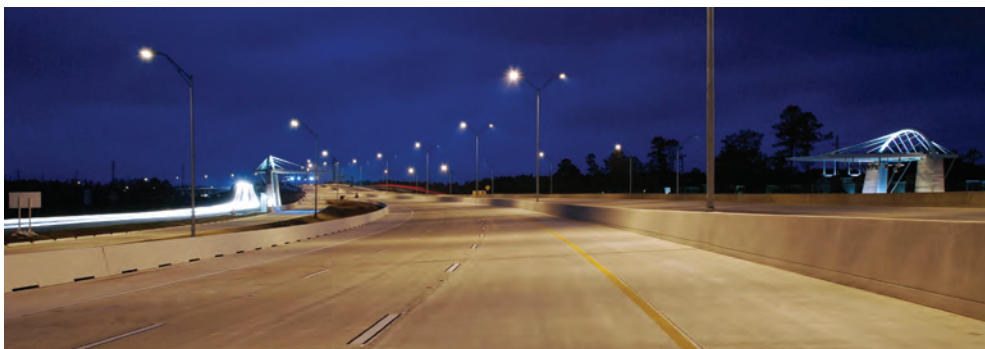
RESOURCES METAL MATERIALS: Hirschfeld Industries; MEMBRANE ROOFING: Siplast; METAL DOORS: Bartley Texas Builders Hardware; GYPSUM BOARD FRAMING: USG; FLUID APPLIED FLOORING: Sherwin Williams



SITE PLAN



ELEVATION



expressway. The assembly of the main plaza implies an efficiency of material as the structure is limited to the near minimum of elements necessary merely to complete the 230-foot span. This “bridge” supports no walkway, no overpass, nor other means of passage from one end to the other. Instead, a canopy suspended from the twin arches carries an array of light fixtures, monitoring cameras, and E-ZTag readers, as well as various signage displaying lane designations. At either side, a pair of cast-in-place concrete buttresses anchors the vaulted weave of thin, recycled-content steel members held in tension and compression to span the wide roadway. Aligning with the arc of the steel, these concrete buttresses taper upward from a wide base to a narrow top where the two materials meet.

Subtle irregularities in the surface of the concrete belie the solidity of the massive buttresses while hinting at the powerful forces at play. This is most evident in the exit plazas, which use a similar formal language as the main plaza but on a more readily perceptible scale. Here, a pair of tapered pillars support a single and much simpler arch from which the canopy structure is supported by tension cables. Unlike with the main plaza, these smaller canopies (holding the lights and electronic instruments) cantilever over the road.

Jesse Hager is a principal of CONTENT, an architecture firm based in Houston.