

All hail the
lighting agent p.20

Why your design could
be red-flagged p.24

Tunnel lighting
never sleeps p.48

Dream projects are
all in the mind p.53

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Burst of Inspiration

The Christopher S. Bond Bridge, Kansas City

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Sparkling fireworks shoot through the sky amid high-reaching cables all arching towards the same point. It is Independence Day 2011, and a day for residents of Missouri to celebrate the landmark addition of the Christopher S. Bond Bridge. The distinctive, single A-frame pylon, cable-stayed bridge provides a dramatic experience for motorists crossing the span at all times of day. But in the evening, the lighting reveals the bridge in new and exciting ways.

The Missouri Department of Transportation (MoDOT) made the decision to construct a new, distinctive bridge after years of congestion led to an increase in travel time, fuel costs, pollution and traffic accidents. The section of highway that carries interstates 29 and 35 from North Kansas City, Missouri, to Kansas City proper is heavily traveled, and the Paseo Bridge, which carried those high-

ways over the Missouri River was more than 50 years old. For these reasons, MoDOT determined that a replacement was necessary. Seeking a strong aesthetic statement for the bridge, MoDOT turned to lighting designer Illumination Arts LLC, Bloomfield, NJ, to bring its vision to life.

Developing a design and balancing the competing goals of the project posed some challenges. The community preferred an easily recognizable bridge that would make a striking impact, but the bridge also had to be durable enough to last the next 100 years while offering safety improvements. MoDOT decided to use a fixed-price, design-build approach as a way to save time and money. The design-build approach allows construction to begin before design work is complete. This helps minimize price escalation from rising material and labor costs and facilitates faster project completion to help minimize inconveniences to the public.

The newest signature element on the Kansas City skyline brings a dynamic presence to the city during the day and night

BY DIANA VENTIMIGLIA

An Avant-Garde Gateway



Programmed color-changing LED panels along the edge girders perform nightly light shows.

Photos: MoDOT



Uplighting the cable arrays and A-frame pylon emphasize the height and scale of the bridge.

“Any project that requires building a huge signature structure involves discussions with various individuals, including community members, to ensure we are giving them what they want,” says Ken Douglas, former co-owner and principal of Illumination Arts and now executive major account representative at OSRAM Sylvania.

FANNING OUT

Once it was determined that the new bridge would be concept driven, Illumination Arts focused on developing an impressive visual. Douglas wanted the bridge lighting to not only create a moving line across the 1,700-ft-long structure, but also highlight the semifan arrangement of the cables. But lighting a bridge isn’t the easiest of endeavors. “Bridges are rough to deal with,” says Douglas. “You are always dealing with vibrations, and they bounce up and down. All of the fixtures need to withstand that.” Douglas also made sure that all the chosen fixtures were protected

with a salt-spray resistant coating before they were installed.

The cable-stayed design features a diamond-shaped concrete pylon that rises more than 300 ft above the water. The suspended portion of the bridge consists of asymmetrical cables supporting a main span measuring 550 ft and a side span of 450 ft, making up 1,000 ft of the total bridge length. The main span is supported by 40 cables that radiate into a semifan arrangement. In order to showcase the height and scale of the structure, Douglas and his team uplighted the cables with Kim Lighting AXF26 250-W metal halide lamps fitted with snoots. Forty fixtures were mounted to the bridge deck; one for each cable. At the end of the longest cables in each of the planes of stays, there are two fixtures mounted to the cable stay anchorage rather than the bridge deck. “We wanted to make sure those traveling on the highway, as well as observers from the shoreline, were engaged,” says Douglas.

One of the most eye-catching elements of the design is the nightly light show. Approximately 106 LED color-changing panels (Barco Lighting) were placed along the edge girders on both sides of the bridge to create an attractive visual presentation. The LED panels allow an infinite number of lighting shows from simple one-color panels to complex color-changing events. “This was quite a long process,” says Douglas. “Content development took about six months.” Douglas and his team worked with the MoDOT to determine what color themes they should incorporate into the display. The system was developed in house and then integrated on site. “The programming went very smoothly,” says Illumination Arts owner and principal, Faith Baum. Adds Douglas, “The timing and spacing of the color patterns didn’t require much tweaking out in the field. It was more a matter of adjusting the play back speed that took a bit of time.” The color-changing technique allows for the celebration of sea-

sons, holidays and significant local events. Through the use of details and lighting, the Illumination Arts team were able to create a functional and visual pathway for the community. ■

METRICS THAT MATTER

The Christopher S. Bond Bridge – kcICON Bridge

Lamp Types: 2
Fixtures Types: 2

THE DESIGNERS



Faith Baum, IALD, LC, LEED AP, Member IES (1992), is the firm owner and principal of Illumination Arts, LLC.



Kenneth Douglas, Member IES (2002), is the executive major account representative at OSRAM Sylvania and former co-owner and principal of Illumination Arts, LLC.