



Photos: Skira Lighting, Ktkoko Lighting

Continental Connection

Repeating patterns of light turn a double-decker underwater tunnel into a symbol of Turkish culture

BY SAMANTHA SCHWIRCK

When the Eurasia Tunnel opened in late 2016, CNN dubbed it the “super highway under the sea.” The 3.4-mile long, two-story tunnel connecting Europe and Asia, used by more than 100,000 vehicles each day, was first conceived more than 20 years prior, as part of Turkey’s master infrastructure plan. Construction for the highly anticipated structure, built 348 ft under the Bosphorus Strait, began in 2011, and in 2017, Skira Architectural Lighting Design, Pula, Croatia, earned an IES Illumination



Award of Merit for its decorative lighting.

Firm owner Dean Skira based the design proposal on re-creating traditional Islamic patterns and colors inside the tunnel, while giving the atmosphere a joyful rhythm. To accomplish this, more than 2,000 “Trick” fixtures, designed by Skira for manufacturer iGuzzini, were installed throughout the tunnel. “The idea for Trick came from the desire to have the beam of light under control,” Skira says. “The benefit of this is that you can graphically create many different shapes

in the space with light.” Lines of 5000K, light-blue light and dark-blue light from RGB LED fixtures blend with background illumination from blue LED tubes, recalling geometric ornamental figures and other traditional elements of Turkish culture. “The patterns and colors resemble Fatima’s Hand and the Evil Eye, popular in Turkey where people think they bring good luck,” Skira explains.

Design considerations included budget, mounting locations and, most importantly, motorists. “The light couldn’t distract the driver’s

Illumination evoking traditional Islamic patterns and colors repeats inside the tunnel between Europe and Asia.

The interior theme continues in arch structures (above) at each entry.

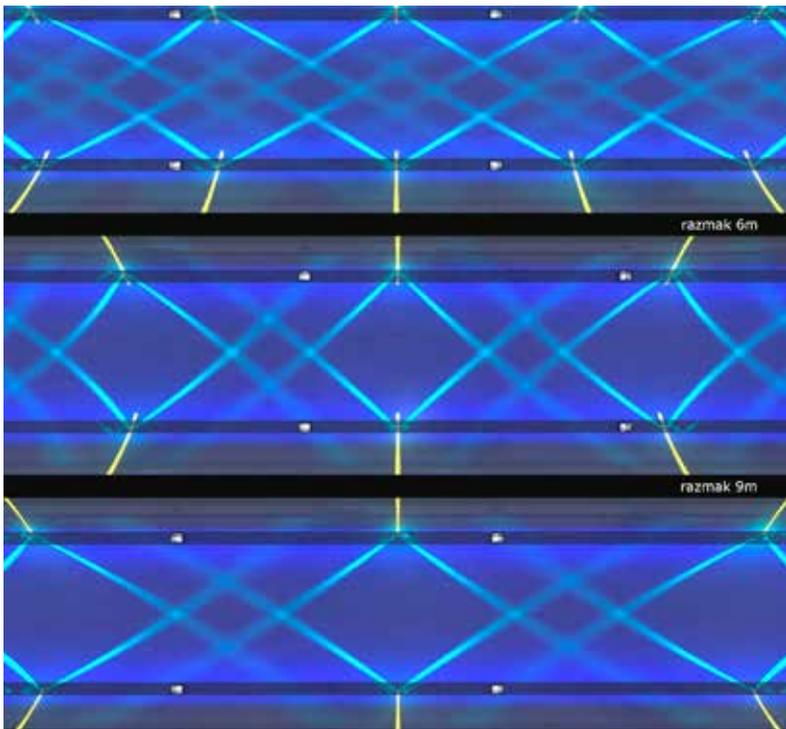
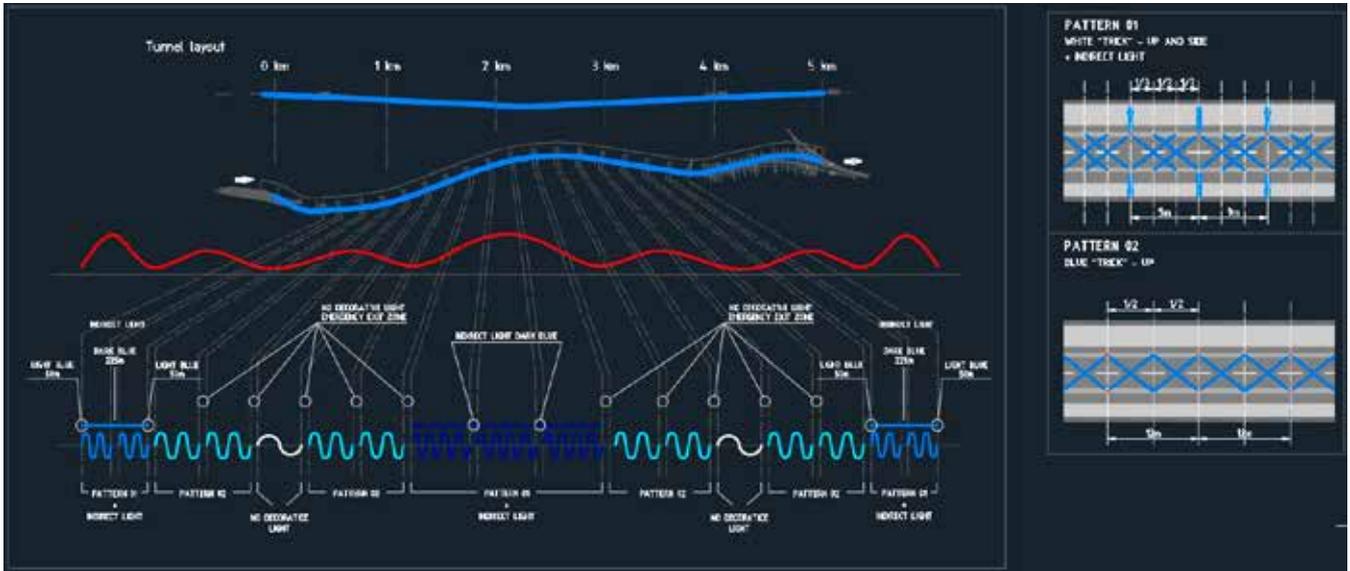


Figure 1. Details of the lighting's frequency and spacing.

Bottom: The diffused blue light and pattern of lines creates an unobtrusive rhythm.

concentration,” Skira says, “and the luminaires could only be mounted on the existing cable support system.”

REPEAT APPEARANCE

The lighting patterns repeat throughout the tunnel, with varying frequency and alterations in each segment (Figure 1). At both entries, a 164-ft stretch with a light-blue pattern gives way to

a 738-ft section with a dark-blue pattern, before the light blue reappears for another 164 ft leading up to two central emergency exit zones. Here, the decorative light disappears. “The evacuation zones couldn’t be included in the design process, so the pattern had to be discontinued in these specific parts,” Skira explains.

“Pattern one”—light aimed up and to the side, combined with indirect light—was prescribed for the outer light- and dark-blue stretches, while “pattern two”—uplight—was used in the segments leading to the emergency zone. Pattern one was also used in the tunnel’s central segment, illuminated by dark-blue and indirect light. The spacing of the luminaires changes with each pattern as well. The fixtures are positioned farther apart toward the center of the tunnel, which makes the journey less monotonous.

The concept repeats once more in the toll plaza areas, with architectural structures that embody the light pattern generated inside the tunnel. Eight toll booths on each side, together comprised of 80 arches illuminated by color-changing fixtures, hide street lighting and mark the tunnel entrances, while also mimicking arches used in mosques throughout the history of Turkish architecture. “We developed a parametric model in



Color-changing capabilities transform the entries into a symbol of the connection between the continents.

788 Olympic pools that could be filled by the excavated material from the project

Source: Eurasia Tunnel Operation Construction and Investment Inc.

order to have a better choice of structural variations of the 80 arches in the conceptual stage, and greater precision and control in the realization phase,” Skira adds.

ADDING VALUE

All of the fixtures are DALI dimmable and can be programmed with various scenes. “The budget strongly influenced the design and the density of the pattern, the spacing of the fixtures,” Skira says, “but the most value was the flexibility of all pattern versions,” which helps create the unobtrusive rhythm of the diffused blue light and pattern of lines.

“The project has a clear visual identity, complex parametric geometry and simplified complexity

for construction,” Skira says. “That’s the reason it became the visual symbol for the tunnel on a national level—it was even recognized by the Cultural Heritage Protection Agency and became a national postal stamp motif.” □

THE DESIGNER



Dean Skira, Member IES (2006), is the founder of Skira Architectural Lighting Design, Pula, Croatia.

FAST FACTS

- The 3.4-mile long tunnel connects Europe and Asia.
- Toll-plaza structures continue the light pattern produced inside the tunnel.
- All fixtures are DALI dimmable and can be programmed with a variety of scenes.