

# AESTHETICS COMMENTARY

by Frederick Gottemoeller



It's always exciting when a new (to the United States) bridge type arrives on the scene. The Sunshine Skyway started a period of innovation and experimentation that led, in subsequent decades, to the construction of a number of outstanding cable-stayed bridges in the United States. The Pearl Harbor Memorial Bridge will do the same.

As with the new cable-stayed bridges, a key issue will be the appropriate shape for the towers. However, the girder is also an important feature in extradosed bridges, more so than the deck of a cable-stayed bridge. Designers will have to incorporate the appropriate size and shape of the girder. Striking a good visual balance between the girder and the towers is the key to success.

The first part of the Pearl Harbor Bridge to be constructed, the northbound half, is sandwiched between the old bridge and a massive lift bridge. At this stage, it is hard to evaluate all of the facets of the design, but it is clear already that the designers have achieved a good visual relationship between the visual mass of the towers and the visual mass of the girders. The simple oval cylinders of the towers are visually strong shapes that make clear their central role in the support of the bridge. The sloped outside webs of the girders minimize their visual mass, so that they don't overwhelm the towers. Meanwhile, the slight haunch at the piers makes clear that the girders play a major role in the support of the deck.

There were additional reasons to make the towers strong, simple shapes. The towers need to hold their own against the towers of the adjacent lift bridge, against the tanks and towers of the surrounding industrial landscape, and the sheer width and length of their own bridge deck. The visual strength of their shapes allows them to assert their importance in the scene.


Finally, the exposed stay anchorages along the edges of the girder create a repetitive rhythm of smaller elements and give the bridge some details that relate its scale to its neighbors. They also make clear how the bridge works by drawing the eye to the point where loads are transferred from the girders to the stays and thence to the towers.

Extradosed bridges are now on the drawing boards and a few are under construction. It will be interesting to see how designers address this bridge type's aesthetic challenges.

system was coated with spray-on foam to insulate the surface concrete and maintain internal thermal gradients below the required 20°C (68°F). Internal concrete temperatures were monitored hourly during curing using an automated sensor system that communicated wirelessly with a dedicated internet-accessible computer.

## A Grand Opening

On Friday, June 22, 2012, a ribbon cutting ceremony was held to celebrate the completion and opening of the northbound extradosed bridge. The ceremony was highlighted by a Ceremonial Veterans Wreath Dedication with four surviving veterans of the attacks on Pearl Harbor, a ceremonial ribbon cutting, and speeches from local political leaders, FHWA, and the U.S. Navy. Approximately 250 members of the public attended.

Overnight, following the ceremony, work was completed on the approach roadway temporary crossovers and the new northbound bridge opened successfully to traffic, Saturday morning, June 23, 2012. 



Tower leg jump-form systems were sprayed with insulating foam to control thermal gradients during mass concrete curing. Photo: Lochner/FIGG.

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