

Aesthetics in Public Works

by Frederick Gottemoeller



Yes, we are in Pittsburgh. Photo: Frederick Gottemoeller.



The symbol of Pittsburgh constructed from LEGO® pieces. Photo: Frederick Gottemoeller.

Last summer, my wife and I took our younger grandson on a tour of Pittsburgh, Pa. The big attraction was the dinosaur exhibit at the Carnegie Museum of Natural History. Of course, Pittsburgh is also known for its bridges, with more than 400 sizable bridges in and around the city. The decorator of our hotel must have had that reputation in mind when selecting an image of one of those bridges, the Roberto Clemente Bridge, to place on a wall in our room. The next day, we discovered that the Carnegie Science Center was hosting a LEGO® exhibit. That is a not-to-be-missed event if you are 8 years old. So, of course, we went. When we arrived, we found that the exhibit contained a LEGO® model of the very same bridge.

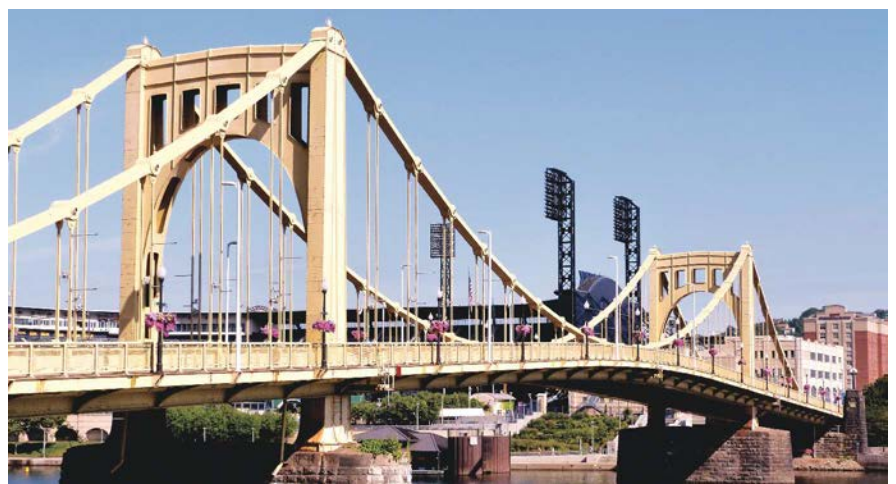
Of the hundreds of bridges in Pittsburgh, why did both the hotel decorator and the LEGO® modeler pick the Roberto Clemente Bridge, which is neither the largest nor the most prominent bridge in the area? The answer is that this particular bridge has so captured the imagination of residents and visitors alike that it has become a widely recognized symbol of Pittsburgh the city. Being one of three identical bridges that cross the Allegheny River in downtown Pittsburgh reinforces the impression this bridge makes. That impression could have been quite different.

In 1926, when the decision was made to build these three bridges, Allegheny County's Bureau of Bridges put forward the then-accepted standard design for bridges of this size: through Pratt trusses. However, Pittsburgh's Commission of Fine Arts objected, arguing that three identical through-truss bridges would block views of the downtown and mimic every other city's bridges. Pittsburgh deserved better. So, the Bureau of Bridges was given a new set of *aesthetic* criteria for the project. It went back to the drawing board to find a distinctive and memorable design that would not block views of downtown.

To its credit, the bureau chose an innovative bridge type that satisfied these criteria, the self-anchored suspension bridge. The design met the difficult navigation clearance requirements of the sites while creating three memorable bridges. These bridges cost more than the trusses would have, but did the additional cost create an offsetting value for the public?

Now, 93 years later, the decisions of the hotel decorator and the LEGO® modeler suggest that the investment *has* paid off. The civic value of the three bridges is demonstrated by their current names. They recognize two of Pittsburgh's famous sons, baseball player Roberto Clemente (Sixth Street) and artist Andy Warhol (Seventh Street), and

The Roberto Clemente Bridge spanning the Allegheny River in Pittsburgh, Pa. Photo: Nathan Holth, HistoricBridges.org.



one famous daughter, environmental scientist Rachel Carson (Ninth Street). As a result of the additional initial investment in aesthetics, these three bridges have provided many years of recognition and pleasure for Pittsburgh.

What lessons might we take from this story? First, that the currently accepted standard design solution is not always the best option. It can be tempting to assume that what worked best for the previous five bridges will work best for the sixth. In fact, each bridge is distinctive, and designers need to be afforded the time to think through the distinctions, both functional and aesthetic, and develop their proposals accordingly. That process is called “conceptual design,” and it is the time when innovation and creativity take place. It is the process that the Bureau of Bridges short-changed when it proposed three through-truss structures for the Allegheny River.

Second, the story emphasizes that bridges inevitably become powerful symbols. Their functional importance and visual prominence make sure of that. To put it another way: bridges span physical barriers and connect previously separated people and places. Many bridges possess immense symbolic importance. Their design can also represent a region’s or a culture’s creativity, wealth, and ambitions. Public decision makers, with the participation of their citizenry, must decide what values they want their bridges and other symbols to convey. If they decide, through a legitimate public decision-making process, to devote public funds to expressions of aesthetic quality, that choice becomes as legitimate a use of public funds as any other.

When improved aesthetic quality is established as a goal, the resulting concept may require a greater investment compared to a standard solution. Does that mean that spending

even more money will ensure even better results? Not necessarily.

In 2007, Columbus, Ohio, decided to replace two historic but deteriorating bridges crossing the Scioto River in the city’s center. The goal was to build “signature” bridges, whose distinctive appearances would instantly symbolize the spirit of Columbus. The City set generous budgets of \$26 million for each bridge.

The first bridge to be replaced, at Main Street, was built for \$44 million.

For the design of the second bridge at Rich Street (formerly Town Street), the City turned to a team that included me. As a starting point, the City directed that our concept have no above-the-deck elements that would block views of the Main Street Bridge. The city also asked us to come up with a concept that would cost less than the Main Street Bridge and that could be built quickly, in time for the city’s bicentennial celebration. Finally, the City made it clear that we were still expected to deliver a signature design, one that would complement both the Main Street Bridge, just 600 ft downstream, and the Broad Street Bridge, 600 ft upstream.

Responding to these conditions required an extensive conceptual design process. Early on, we realized that we could make small adjustments in the alignment of Rich Street that would significantly simplify the bridge’s geometry, thus allowing for the economical use of custom precast concrete elements. With that in mind, we and the City agreed to a revised budget of \$14 million.


In the final design, 68 precast concrete pieces were post-tensioned together to form the four lines of gracefully tapered arches that support the bridge. The Rich

Street Bridge, which is almost exactly the same width and length as the Main Street Bridge, was built for \$13 million. Given the cost pressures when the Main Street project exceeded its budget, the City might have insisted we settle for a standard prestressed concrete girder solution. However, by giving us an opportunity to do proper conceptual design, the City allowed us to come up with an innovative application of precast concrete that produced a signature bridge within the revised budget and in time for the bicentennial.

By focusing on *both* economy and aesthetic quality, we achieved a bridge that met the City’s aesthetic objectives but cost significantly less than the Main Street Bridge.

When public funds are spent for aesthetics (or for any other purpose), the public is entitled to know that they are getting maximum value for their money. To achieve that goal, the aesthetic value that each feature brings to the bridge must be weighed against its cost. That assessment is admittedly subjective, but the ability to make such judgments with discernment and pragmatism is the basis of aesthetic success in public works. The designer’s goal must be to create the maximum aesthetic bang for each public buck.

References

1. ASCE Pittsburgh Section 100th Anniversary Publication Committee. 2018. *Engineering Pittsburgh: A History of Roads, Rails, Canals, Bridges, and More*. Charleston, SC: History Press.
2. Gottmoeller, F., J. Shanks, and T. Butz. 2013. “The Design and Construction of the Rich Street Bridge over the Scioto River.” In *Proceedings, 2013 National Bridge Conference Chicago, IL: Precast/Prestressed Concrete Institute*. 

The Rich Street Bridge in the “postcard view” of downtown Columbus, Ohio.
Photo: Randall Scheiber.

