

*In the wake of tragedy,
more funding helps expand bridge program*

St. Paul Creates Replacement Plan

by Kevin L. Nelson, City of St. Paul, Minn.

The collapse of the I-35W bridge in the Twin Cities region brought increased attention to the condition of Minnesota's bridge infrastructure, beginning a process to increase the available funding for replacement projects and rehabilitation. Most of our recent bridge and retaining wall projects have been concrete structures, and we expect that will continue for the future.

The additional funding, especially through the state matching-funds program, is a welcome addition. It is being financed by a bond fund supported by an increase in the gasoline tax—the first such increase in 25 years. Minnesota had fallen behind other states in increasing this funding as there was no way to include an inflation factor in our budgeting. This caused us to fall behind in our construction. This program will help us to catch up and update bridges more quickly.

In all, the city has 331 bridges within the right-of-way of the city, county, and state with 110 of those being concrete. The City of St. Paul has 12 structurally deficient bridges,

according to our current bridge inventory. All are programmed for replacement in the next 5 years, with three to be replaced in 2008. The city also has nine Mississippi River crossings, including three concrete arch bridges and a segmental box girder bridge. All have been rebuilt or constructed new within the past 15 years.

When we replace or build a new bridge, most often, we use the standard Minnesota Department of Transportation precast, prestressed concrete I-girders, although the state recently developed new standards that include a solid box beam design and an inverted T-beam. We have not yet designed with those components, but we will be using them once we see how best to apply them. Cast-in-place concrete decks are used on most of the bridges.

We use concrete on our new bridges today because it fits our needs. It is a versatile material, providing a variety of ways that we can mold it and color it. It is economical and readily available. It also offers high durability and strength that will provide a service life of 50 to 100 years.



The Raspberry Island Bridge features five spans of cast-in-place concrete slab girders. The bridge ties in with the nearby Harriett Island trail system and the River Walk, and features "St. Paul Rail" designed hand rails.

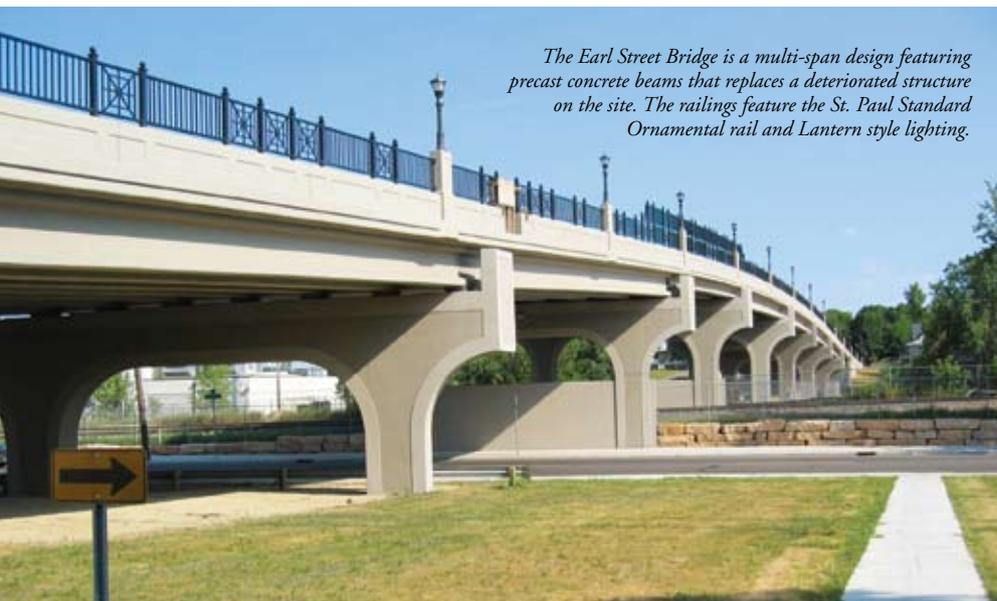
Two of the three bridges being replaced this year will be replaced with concrete bridges. We anticipate replacing the remaining deficient bridges at a rate of two bridges per year. Most of these are local roads crossing railroads, and some of them are as much as 100 years old. The bridges being replaced this year were constructed in the 1950s.

One of our most notable recent bridges was the Raspberry Island Bridge, which is the only land link to the island for vehicles and pedestrians. The five-span, cast-in-place concrete slab bridge was built during a difficult spring flood, which slowed falsework and forming procedures. The bridge features two 50-ft-long end spans and three 75-ft-long center spans. Ornamental steel railings and a colored concrete overlay on the deck panels were used to add visual appeal to the bridge.

City engineers work closely with the state on achieving design goals and coordinating work so that designs are complementary, efficient, and cost-effective. Concrete designs ensure that those goals are met for us.

Kevin L. Nelson, P.E., is the bridge division manager for the Public Works Department of the City of St. Paul, Minn.

The Earl Street Bridge is a multi-span design featuring precast concrete beams that replaces a deteriorated structure on the site. The railings feature the St. Paul Standard Ornamental rail and Lantern style lighting.



EDITOR'S NOTE

If your city has a high percentage of concrete bridges or some interesting and innovative concrete bridges and would like to be featured in ASPIRE™ please let us know at info@aspirebridge.org.

The Secret is Out: Structural WWR Is A Superior Choice for Reinforced Concrete

Many say that structural welded wire reinforcement (WWR) is the best-kept, time-saving, high-quality, cost-cutting secret in the concrete reinforcement industry today -- for virtually any application that calls for traditional reinforcement products.

WWR is a highly controlled, cold-worked structural product, produced in standard and custom prefabricated sheets, with higher yield strength than Grade 60 reinforcement. High-quality welds and computer-controlled spacing eliminate the time-consuming and less precise job-site layout and tying that is typical of traditional reinforced concrete construction. The higher yield strength of the steel means less weight and less handling -- often resulting in a reduction of as much as 50% in labor costs and less material.



WIRE REINFORCEMENT INSTITUTE®

Call (800) 552-4WRI [4974] or write:

WRI

942 Main Street, Suite 300
Hartford, CT 06103

www.wirereinforcementinstitute.org

Excellence Set in Concrete®

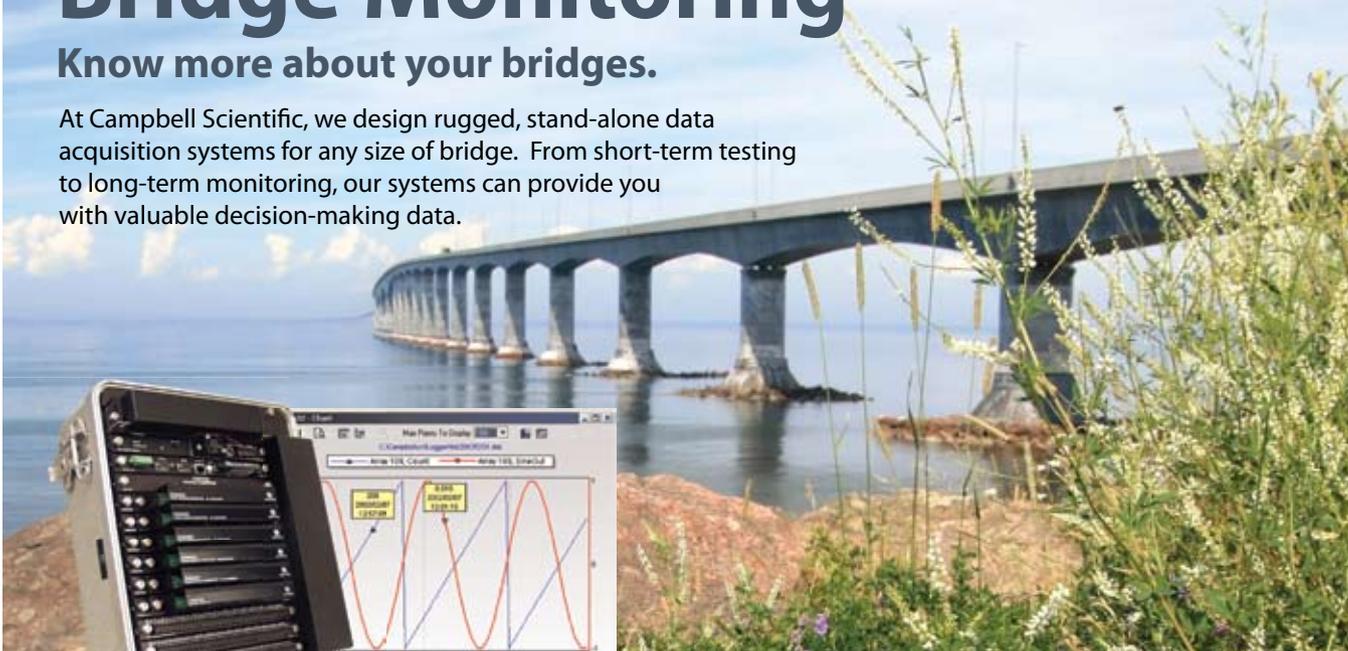
WWR is used in standard beams and girders. For example, Daniel Kolb of Pre-Stress Engineering Corp., Prairie Grove, IL, stands beside precast, prestressed concrete, 190-ft.-long I girders with WWR shear reinforcement here. WWR is also used in bridge decks, bridge rails, median barriers, sound walls and more. Welded wire can also be epoxy-coated to meet special requirements in coastal or snowbelt environments.



Bridge Monitoring

Know more about your bridges.

At Campbell Scientific, we design rugged, stand-alone data acquisition systems for any size of bridge. From short-term testing to long-term monitoring, our systems can provide you with valuable decision-making data.



(435) 750-9692
www.campbellsci.com/bridges

 **CAMPBELL®
SCIENTIFIC**
WHEN MEASUREMENTS MATTER