

OHIO

State funding focuses on repair and replacement of local bridges

by Pieter Wykoff and Tim Keller, Ohio Department of Transportation

The Rich Street Bridge was the perfect back-drop to Columbus' famed Red, White, and Boom Fourth of July celebration. Photo: Burgess & Niple.

With nearly 28,000 bridges, Ohio ranks second in the nation for the number of bridges connecting state and local roads. These are all critical to the state's transportation infrastructure. Most of these bridges are shorter-span bridges on local road systems, but the large Ohio inventory also contains a number of major, iconic structures. Several of the more-recently constructed concrete bridges in this category have been featured in past issues of *ASPIRE*.™ These include the Veterans' Glass City Skyway in Toledo (Summer 2007), the Rich Street Bridge in Columbus (Fall 2012), and the Jeremiah Morrow Bridge in Warren County (Winter 2014), all of which are owned by the Ohio Department of Transportation (ODOT). A brief description of each of these beautiful concrete bridges follows.

Veterans' Glass City Skyway—Toledo

The Veterans' Glass City Skyway Bridge carries Interstate 270 (I-270) across the Maumee River at Toledo, Ohio. The cable-stay supported main spans reach 612.5 ft on each side of the single tower. The entire structure is 8800 ft long and was constructed using 3050 precast concrete box-girder segments. In the main spans, the twin boxes are connected using delta frames that transfer loads from the box girders to the cable stays. The sides of the tower are encased in glass

that is reflective during the day and is lit from behind with arrays of multi-colored LEDs at night. The bridge was opened to traffic in 2007.

Rich Street Bridge—Columbus

The Rich Street Bridge crosses the Scioto River in the heart of Columbus, Ohio. The new five-span bridge is 563 ft long and carries three lanes of traffic and two 10-ft-wide sidewalks. Precast semi-lightweight concrete arch segments support haunched precast concrete girders and a cast-in-place concrete deck. All elements of the structure were post-tensioned for structural efficiency and durability. The bridge was completed in 2012.

Jeremiah Morrow Bridge—Warren County

The Jeremiah Morrow Bridge is the tallest bridge in Ohio and is the first cast-in-place segmental concrete box-girder bridge to be constructed in the state. The six-span twin bridges carry Interstate 71 (I-71) nearly 240 ft above the scenic Little Miami River in Warren County, Ohio. The two main spans are 440 ft long.

The single-cell box girders have a top flange width of 55 ft and vary in depth from 12 ft deep at midspan to 25 ft deep at the piers. The

northbound bridge was opened to traffic in 2013; the second bridge is still under construction with completion expected in the fall of 2016.

Improving Local Bridges

The Buckeye State's bridge inventory is better than most when it comes to nationwide reports on statewide bridge conditions, but the ODOT continues to rehabilitate and repair bridges on most interstates, and U.S. and state routes. Many of the bridges on local routes, which are owned and maintained by counties and cities, are in need of more-costly repairs.

To address the condition of these local bridges, Governor John R. Kasich launched the Ohio Bridge Partnership Program in 2013 to help cities and counties repair 220 local bridges. The three-year, \$120-million program started the following year by fixing the first 40 structurally deficient bridges on the local transportation system. Reductions in original cost estimates allowed program planners to add 10 more bridges to the list in 2014, bringing the total number of bridges receiving repairs to 230. The next transportation budget provided an additional \$10 million to the program, extending the program through 2017. In 2015, 84 local system bridges in Ohio were slated for reconstruction as part of the program.

"It's been a much-needed shot in the arm for



Nighttime shot of the mainspan cantilever segment erection for the Veteran's Glass City Skyway Bridge from the north shore of the Maumee River. Photo: FIGG.

a lot of Ohio counties. It's helped some counties get caught up and get through the replacement of deficient bridges. This is a program where you can really see the results," said Fredrick B. Pausch, executive director of the County Engineers Association of Ohio (CEAO). "For any county engineer, their number one job is the safety of the traveling public so this fits perfectly into what they try to do every day as they try to make roads and bridges safer for everybody."

To qualify for the program, local bridges had to meet the federal bridge definition of 20 ft or longer, be identified as structurally deficient, and be open to and carrying vehicle traffic. "It wasn't anything political; it was based on engineering numbers and based on the worst county bridges in the state of Ohio. So that process was very well done," said Pausch.

Investing in local bridges is not new in Ohio. ODOT already spends about \$35 million each year to help repair local bridges, but counties and cities are required to match at least 20% of the costs. The state funds the new Ohio Bridge Partnership Program at 100%, which means local governments share none of the costs.

"This new program complements the existing program through a much larger effort. We work with the CEAO all the time, but this is going at a very fast pace and we are funding it 100%," said

Andrea Stevenson, ODOT's Bridge Partnership Program manager.

"This is going to be very fast paced. Typically in the past, bridges might go to construction about 3 to 4 years after they are selected for repairs. But under the new program, bridges are going to construction in some cases within 6 months," said Stevenson.

Background

The new bridge program almost did not happen. Just a few years prior, ODOT announced a \$1.6 billion transportation funding deficit. Transportation projects that had been promised to communities for years were pushed back and forced to wait for new funding, in many cases, for more than a decade.

ODOT immediately began a top-to-bottom review for improved operational efficiencies and better ways to spend scarce resources. Through these efforts, ODOT was able to identify \$600 million in operating costs that could be redirected to the transportation construction program. Improved department efficiency, workforce and vehicle fleet reductions, higher than projected gas tax receipts, and the elimination of federal earmarks allowed ODOT to move even more money into the budget for new construction projects throughout the state.

Then, the Ohio General Assembly passed Governor Kasich's "Jobs and Transportation Plan" in 2013. The plan authorized the Ohio Turnpike and Infrastructure Commission to sell up to \$1.5 billion in revenue bonds, backed by future toll revenue. When combined with federal and local money the state will receive, the Jobs and Transportation Plan is expected to result in an investment of more than \$3 billion in Ohio's transportation infrastructure over 6 years.

The innovative plan, along with ODOT's careful management of resources by reducing overhead costs, meant the department could look at new ways to invest in infrastructure spending and assist Ohio's counties and cities with their deficient bridges. The Ohio Bridge Partnership Program was born.

Seeing Results

The first bridge completely reconstructed as part of the new program re-opened in August 2014 in Meigs County. The bridge on Tornado Road (or County Road 124) over the Yellowbush Creek just outside of Rutland, Ohio, took 6 weeks to repair and cost \$492,570.

Allen County in the northwestern part of Ohio is in the process of benefiting from a state investment of nearly \$5 million to repair or replace seven bridges. Allen County Engineer

Tim Piper says that with a total county transportation budget of \$6 million, any assistance to bridge repairs is tremendously helpful.

“We had a total of about 23 bridges that were posted with weight limits and now seven of them will be opened up to traffic. This means trucks using the local routes from stone quarries, or from businesses, will no longer have to detour around these bridges. So, for Allen County, we’re actually wiping out about one-third of our bridges that were posted with weight limits,” said Piper. Posted weight limits on local bridges also impact schools and fire and rescue departments where, in some cases, buses and fire trucks are forced to detour for miles.

“This is certainly going to save a lot of time and money for our schools and our local emergency management organizations who can’t go across many of these bridges due to the weight limits that are posted on them,” said Piper.

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Repairing and replacing more than 230 bridges is a reduction of nearly 12% in the state’s structurally deficient bridges. Additional investments are reducing the statewide total of structurally deficient bridges even further.

“Anytime you can take 230 structurally deficient bridges off the inventory, that’s a very positive thing and that frees up money for county engineers to spend on other priority bridge projects,” said Tim Keller, ODOT’s administrator in the Office of Structural Engineering.

“Concrete is a vital material for Ohio’s bridge inventory. We have a significant inventory of conventional concrete bridges as well as prestressed concrete box beam and prestressed I-beam bridges. In a typical year, we will build about 300 new bridges in Ohio with around 1,000,000 ft² of deck area. Typically, between 70 to 80% are concrete structures,” he says. During the heyday of Interstate construction, Ohio’s bridges were built primarily with steel. In the past 30 years,



Jeremiah Morrow Bridge, looking downstation from Pier 5 Southbound, towards the Little Miami River. Photo: Ohio Department of Transportation.

Ohio’s new bridge market has transformed from predominantly steel bridges to predominantly concrete bridges due to lower costs and concrete’s versatility. 

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