



*The new King Avenue Bridge over the Olentangy River incorporates modern design while reflecting the history of the earth-filled arch that it replaced. Photos: Franklin County Staff.*

# Creating and Maintaining CIVIC PRIDE in Franklin County

by James A. Pajk, Franklin County, Ohio

**T**he Franklin County Engineers Office is responsible for the inspection and maintenance of 363 bridges. With a population greater than one million residents, numerous communities in the county have redeveloped their historic districts, many of which have crossings that enter into these areas. Through the public involvement process, Franklin County understands the importance of creating gateways into these communities. The use and innovation of modern concrete bridge engineering has helped our office achieve goals of maintaining and creating structures with civic value.

The existing structures along the Olentangy and Scioto Rivers were designed and built as a result of the 1908 City of Columbus Master Plan and the 1913 flood. Structures on Lane Avenue, Third Avenue, and King Avenue were multi-span, earth-filled reinforced concrete barrel arches. A plan was developed to replace each structure and to design a bridge to complement its surrounding community.

Most municipalities and civic groups wished to preserve the structures that they perceive as gateways. The need to expand infrastructure facilities made preservation difficult. Ultimately, the new structures retained the aesthetic elements of historic significance while using modern construction techniques. Each new structure was designed with an expected service



*Lane Avenue over the Olentangy River serves as a gateway to Ohio State University. The two-span, cable-stayed bridge limited environmental impacts, and the use of concrete allowed the contractor to complete the project 5 months early.*

*Franklin County crews fabricated concrete slabs and stay-in-place railing panels for the Dublin Road Bridge to expedite construction.*

life of 100 years and all incorporate concrete as the predominant material. Concrete, whether it is pretensioned, post-tensioned, or simply reinforced, allowed us to expand our creative thinking in terms of appearance and design. Precasting was also used to achieve a high level of quality control, limit construction time, and minimize impacts in environmentally sensitive streams.

The design for the King Avenue Bridge over the Olentangy River was selected to reflect the history of the bridge that it was replacing. The bridge serves as the south entrance to Ohio State University. Public opinion led the design team to create a five-span segmented, precast concrete arch. This structure type was the first of its kind in Ohio. Seventy individual precast arch rib sections were post-tensioned by the precaster, connected at midspan by a diaphragm, and post-tensioned together. Precast, prestressed box beams were used to span from pier seats to arch seats. The high-performance concrete deck has transverse post-tensioning to limit deck cracking.

Lane Avenue, which serves as the main entrance to Ohio State University, was to be widened from three to five lanes of traffic. A more modern bridge was selected to reflect recent expansion of university facilities and lessen environmental impacts. The result was a stunning two-span, cable-stayed bridge with post-tensioned concrete trapezoidal tub girders. The use of concrete allowed the contractor an opportunity to better control the schedule and open the bridge 5 months early.

Franklin County is fortunate to have three bridge maintenance crews very capable of fabricating and constructing concrete structures. We take pride and satisfaction in the work they perform. From late fall to early spring, barring



a heavy snow season, crews precast concrete components for future contract projects.

For our Dublin Road Bridge, the crews fabricated concrete slabs and stay-in-place railing panels to expedite construction and limit the amount of formwork for the railings. Each precast concrete slab unit was unique in size and length. The railing panels were match cast for the fascia slab units.

For the Clifton Avenue superstructure replacement, the crews precast traffic barrier and wall panel sections using formliners. The use of these precast elements on contractor supplied precast, prestressed concrete box beams with a composite deck allowed the project to be completed in four months.

County crews also fabricate four-sided and two-piece, four-sided box culverts for replacement structures. The two-piece units consist of precast bottom slabs with a keyway and three-sided units, which are placed on top of the bottom slab with the joints staggered. Using two-piece units reduces the weight and allows smaller equipment to be used in the field.

Franklin County also has an aggressive concrete sealing maintenance program. All concrete barriers are cleaned and sealed with a non-epoxy silane every 5 years. In addition, all major concrete decks are sealed with a soluble reactive silicate to limit the penetration of salts and oils into any deck cracks.

In conclusion, our office will continue to use concrete as a material that will satisfy the needs of our constituents for generations to come.

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