

BEST OF
2007
AWARDS

Troup-Howell Bridge Replacement

PROJECT OF THE YEAR: Bridge

A project team in Rochester, N.Y., has proven that opportunities exist for creativity and aesthetics even in infrastructure projects.

The new Troup Howell Bridge, formally dedicated in July as the Frederick Douglass Susan B. Anthony Memorial Bridge, now brings a crowning landmark to rapidly developing downtown Rochester.

The \$38 million, 1,165-ft-long bridge project, a development by the New York State Department of Transportation, arose out of a late-1990s engineering inspection that deemed the existing bridge structurally deficient.

The heavy traffic and wear and tear on the bridge, which was constructed in 1954, had taken its toll. There were leaky deck joints, fatigue cracking, pack rusting, pin section loss and seismic vulnerability in some areas. These deteriorations led NYSDOT to the decision to replace the bridge.

In addition to engineers, landscape architects and other staff members at NYSDOT, the project team included consultant Erdman, Anthony and Associates Inc. of Rochester; sub-consultant Fisher Associates of Rochester; H2L2 Architects of Philadelphia; and contractor Edward Kraemer and Sons of Plain, Wisc. The groundbreaking was in May 2004, and the project was completed in August.

The completed infrastructure of the new bridge consists of a three-rib arch span with 12 braces and a fanned cable arrangement. This solution is unique because bridges of this width typically consist of two distinct structures, each with its own two-arch span for support, creating four total arches.



Due to space constraints on either side of the approaches that complicated this standard, the team chose to combine the center arch into a more substantial structure, one that would support both the east and westbound lanes, then requiring only three arches in total. In addition, the bridge is not tied, making it a landmark in Rochester.

The team made use of a wide variety of materials to implement the construction, including precast and cast-in-place concrete for the abutment, bridge deck, sidewalks and pedestrian walkways; Superpave asphalt concrete for the approaches; and structural steel.

The project incorporates a number of creative solutions to standard bridge design that enhance the look of the bridge. The sweeping shape of the arches adds an element of architectural prominence to downtown Rochester with its clean lines and graceful curve. The bridge now frames the view of the city skyline.

The design is further enhanced, partic-

Key Players

Owner: New York State Department of Transportation

Prime Consultant: Erdman, Anthony & Associates, Inc.

Sub-Consultant: Fisher Associates, PE, LS, PC

Sub-Consultant: Lu Engineers

Architect: H2L2 Architects/Planners LLP

Prime Contractor: Edward Kraemer & Sons

Highway & Paving: DiFiore Construction, Inc.

Steel Fabrication: High Steel Structures, Inc.

ularly at night, with the use of an up-lighting system built into the ends of the floor beams. This subtle lighting illuminates the arch and cables from the ground up, creating a soft glow that enhances both the pedestrian walkways and the driving >>

path for motorists. Highway lighting is attached to the cross braces, creating a more aesthetically pleasing solution to the standard davit arms that are typical of highways.

The paint color scheme, which complements the surrounding environment, was chosen with the input of community members and local artists.

The project's complexity was increased with the need to keep traffic operational and moving at all times, and that meant a load of approximately 100,000 vehicles daily. A smart solution came into play—the use of the old bridge as a work platform to build the new. Additionally, a substructure was being put into place where none currently existed, which helped lessen the burden on daily traffic.

The team also faced a number of hurdles in the shipping of large arch seg-

ments as well as delays in some deliveries after 2005's Hurricane Katrina. Due to modifications in plans and timing, these delays created minimal disruptions to the overall project schedule.

At the onset of the project NYSDOT formed the Aesthetics Committee, a group devoted to the visual enhancement of the Interstate 490 corridor. The committee of local government representatives and members of community and arts groups helped shape the final arch design, color scheme and other aesthetic elements of the bridge through its input to the project team.

“The original concept for an arch would have been a signature bridge in and of itself, but the committee's involvement in the development of specific structural and architectural details makes the structure stand out and elevates the

structure to a true icon for the city,” says Howard Ressel of NYSDOT, project engineer for the bridge.

The bridge design also makes a point of including pedestrian amenities. The new pedestrian walkway is cantilevered over the river, offering sweeping views and tying the walkway into the existing promenade. There also are new bike paths and walkways, sidewalks and green space.

The city of Rochester has embraced the final project as a symbol of its growth in the downtown area.

“The bridge has become an icon for the future of our city,” Ressel says. “Although the bridge itself does not give a direct economic benefit nor will it perhaps spur new development by itself, it gives people a sense of place and helps to contribute a feeling of optimism and hope for our future.” <<