

I-76 Allegheny River Bridge

Hamar/Plum, PA



In July 2010, the old twin girder bridges over the Allegheny River between Hamar and Plum in Pennsylvania were demolished. These original truss bridges had been built in 1949 and 1951. They were replaced with a \$190 million concrete segmental bridge.

These bridges were Pennsylvania's first cast-in-place balanced cantilever bridge measuring 2,350 feet in length. The deck is 120 feet high over the river and the deck is approximately 61 feet wide. Approximately 50,000yd³ of concrete and 3,000 tons of epoxy-coated reinforcing steel (ECR rebar) was used in the structure.

During the preliminary design process, three bridge superstructure types—a steel truss, a steel girder and a concrete box girder—were evaluated. Initial construction cost, life-cycle cost and impact to the local transportation network were among the criteria evaluated. Different potential span arrangements for each superstructure type were estimated to optimize combined substructure and superstructure site-specific costs. A cast-in-place concrete box girder superstructure was determined to be the best choice for the site.

Construction began in 2007 and was opened to traffic on September 7, 2010. The new segmental concrete structure consists of 6 lanes of traffic and pedestrian access to provide for the 45,000 vehicles that cross the bridge every day. The bridge was constructed over local roads, active rail lines, the river and 14-Mile Island, an environmentally-sensitive state park.

Team

Owner:

Pennsylvania Turnpike Commission

Designer:

FIGG

Construction Engineer:

T.Y. Lin International

General Contractor:

Walsh Construction Company

Design Criteria:

- Replace functionally obsolete bridge.
- Provide environment-friendly structure that would fit in harmony with the landscape around the Allegheny River and Fourteen Mile Island.

Total Project Cost: \$190 million

Total Size:

LENGTH: 2350 ft

WIDTH: 61 ft

Epoxy-coated Reinforcing Steel:

3,000 tons

Photography:

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