

## Iowa River bridge meets environmental challenges

THE DESIGN and construction methods for a new bridge across the Iowa River have earned the Iowa DOT the FHWA's Environmental Quality Award for their low impact on the surrounding environment.

### Background

Highway U.S. 20 through Hardin and Grundy Counties consists of a two-lane road weaving through small communities. In 1996 a construction site was finalized for the bridge that allows U.S. 20 to become a more direct east/west route between I-35 and Dubuque.

Located near the town of Steamboat Rock, the bridge spans the Iowa River in a primitive area called the Iowa River Greenbelt. The greenbelt houses several endangered plants and animals such as bald eagles, a rare northern monkshood plant, and several types of freshwater mussels.

To protect these species, the Iowa DOT imposed restrictions on the design and construction of the bridge that provided a challenge for designers and builders.

### Environmental constraints

The contractor, HNTB Technology Group, constructed the bridge according to the following Iowa DOT restrictions:

**Avoid disturbing bald eagle roosting habits.** The Iowa DOT hired a consulting firm to monitor the roosting habits and make sure that construction activities (such as noise) were not disturbing the eagles. Restrictions included a possible shutdown of operations during the eagles' roosting months. However, the eagles generally

left the area during daylight hours, allowing the crew to work during the day.

**Reduce impact on the river valley.** Builders avoided construction activities that would disturb the river and vegetation under the bridge. Instead, they used the launched erection method to construct the bridge. Steel girders were constructed in a preparation area known as the launch pit located on a bridge approach. Sections of the deck were constructed in the pit and then individually pushed, using hydraulics, across the already completed spans and put into place.

The piers were constructed (some of them within 10 feet of the river bank) using a metal cylinder drilled into the limestone and filled with concrete. The piers have a foundation only half the size of conventional piers.

Although vegetation had to be removed to construct the piers, most of the valley under the bridge, including the river, remained untouched.

**Control erosion.** Several layers of silt fences, riprap, wetlands, and a filtration system were installed by engineers to prevent river contamination. Workers removed only those trees under the bridge that would grow higher than the bridge itself and other vegetation that interfered with pier construction.

The highway and bridge will be open for traffic later in 2003.

### For more information

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The new bridge overlooks the Iowa Greenbelt, an environmentally primitive area that is home to many endangered plants and animals.

### LTAP Advisory Board

The people listed below help guide and direct the policies and activities of Iowa's Local Technical Assistance Program (LTAP). Contact any of the advisory board members to comment, make suggestions or ask questions about any aspect of LTAP.

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