

INNOVATIVE DESIGN HIGHLIGHTS VERONA ROAD PROJECT

WisDOT and the Strand Associates design team used a successful strategy of combining major design elements in ways not before seen in Wisconsin, and possibly the United States, in order to help travelers in the 65,000 to 110,000 vehicles that pass through the Verona Road and Beltline corridor daily save precious time and personal resources.

The Verona Road project consists of a new **single-point urban interchange** (SPUI), as well as a frontage road jug-handle intersection that combines the construction of a straddle bent bridge on Verona Road and multilane roundabout directly under Verona Road. The project also includes the reconstruction of the Seminole Highway Bridge, two new pedestrian bridges over the Beltline and CTH PD, along with a pedestrian tunnel near the SPUI.

The SPUI design features two-span bridges with offset piers located in the median islands of Verona Road to provide economical span lengths, while reducing unused space. This eliminated the need for a long and costly bridge as part of the project. This specialized design “opened” the interchange area visually by more than 100 percent and also incorporated a convenient adjacent pedestrian underpass to safely separate motorists and pedestrians. This is only the second



Two-span bridge design, with offset piers in the median islands.

SPUI in Wisconsin, and possibly the first SPUI in the United States that uses a two-span offset pier design. Major benefits of implementing a SPUI include moving large volumes of traffic efficiently through limited right of way and improved safety with reduced conflict points; ultimately reducing traveler delay and emissions.

SPECIALIZED JUG-HANDLE INTERCHANGE DESIGN - FIRST IN WISCONSIN

Several unique challenges were addressed within this project through innovative bridge design. A key challenge was addressing safety and operations at the existing at-grade intersection of Verona Road and the frontage roads,



Straddle Bent Bridge over Local Road Roundabout.

which prior to construction, had the lowest level of service rating. The design team evaluated several alternatives for the intersection and recommended a specialized variation of a grade-separated jug-handle-style intersection with Verona Road passing over a new local road multilane roundabout intersection. The new bridges over the roundabout span 278 feet with a pair of custom-designed straddle bent bridges with a single pier column in the central island of the roundabout and pier columns on either side of the roundabout, well outside the bridge footprint. These bridges use an integral steel pier cap that is the **first of its kind in Wisconsin**. These straddle bent structures are centered over and “straddle” the multilane roundabout beneath them to serve the local road network as part of the new grade-separated jug-handle intersection.

The bridges used nearly **2 million pounds of steel and 400,000 pounds of reinforcement**. The design team prepared an early steel Let project to fabricate, deliver, and erect the steel bents. With only a few haulers in the country capable of the complex steel bent delivery, it required 3 days to reach Wisconsin from Indiana.

– By Joe Bunker, P.M., Strand Associates, Inc.®