



PROJECT OF THE YEAR:
TRANSPORTATION
\$5 MILLION BUT LESS THAN \$25 MILLION

Diverging Diamond Interchange at I-494 and 34th Avenue South

Managing Agency: Metropolitan Airports Commission
Primary Contractor: CS McCrossan
Primary Consultant: Kimley-Horn and Associates, Inc.
Nominated By: APWA Minnesota Chapter

The Diverging Diamond Interchange (DDI) was constructed at the intersection of I-494 and 34th Avenue South in Bloomington, Minnesota, becoming the third DDI in the state. Making it unique, the intersection is the only one of its kind with Light Rail Transit (LRT) running through it. This added to both the project complexity and extreme safety concerns. Ultimately, the project set precedence for design of a cost-effective, multimodal interchange on a tight schedule while maintaining traffic.

The interchange project was a joint effort between the City of Bloomington, Kimley-Horn and Associates, Inc., the Minnesota Department of Transportation, and the Metropolitan Airports Commission. Construction was divided into five phases (one for each of the four ramps and one for 34th Avenue) and was completed in a single construction season of only four months.

This project required four scheduled full-weekend LRT shutdowns that required 24-hour construction operations starting Friday nights and ending late Sunday evening or early Monday morning. The shutdowns required extensive coordination with the LRT operator Metro Transit, as this section of track and overhead contact system (OCS) required the main power to be turned off. It also required the use of a bus bridging

system to continue to transport Metro Transit Blue Line LRT passengers for the duration of the shutdown period. All work during this period had to go as planned with no exceptions—any issues would have resulted in not returning the Blue Line LRT back to service on time. These shutdown weekends were well planned around Twins and Vikings games and the crews worked long hours to complete the work ahead of schedule. The track and OCS were returned to service ahead of schedule on every shutdown weekend.

This project not only included traditional roadway improvements associated with an interchange, but also nontraditional improvements such as the modification of three traffic signal and roadway lighting systems for three different interchanges. The existing signals were in poor condition due to age and several prior modification projects, including the LRT interface, making it a very difficult system to modify. The decision was made to keep the existing signal system operational throughout the first four phases of construction, adding challenges for the contractor. In addition, LRT design experience was required to extend roadway track crossings,

modifications to the negative return bonds, OCS pole relocations within the DDI crossover intersection, and electrical distribution modifications.

Since this was the first DDI constructed with LRT in the United States, no manual was available that could be used to develop a signal timing plan, LRT priority scheme, or traffic-LRT signal interface. The design team recommended that a traffic signal supplier be involved early and during the testing and turn-on period to provide input to the timing plan development based on their knowledge of the controller and LRT priority capabilities. The testing went as planned and several relays were installed to share the critical traffic signal calls necessary for the LRT system to operate in an improved condition and for the traffic signal system to receive advanced call from the LRT system's train to wayside cable (TWC) loops.

