

ABC Pilot Project in Collier County, Florida

White Boulevard Bridge Replacement

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Profile view of bridge at the eastern end—looking north. All Photos: Collier County, Fla.

White Boulevard is a two-lane, undivided rural roadway located in a residential area in the northeast corner of the Golden Gate Estates Community in Collier County, Fla. The old four-span prestressed concrete slab bridge was built in 1965 and carries White Boulevard over the Golden Gate Main Canal. In recent years, the structure had fallen into disrepair. An independent condition assessment study was performed in 2008 and together with the Florida Department of Transportation (FDOT) biennial inspection report, the recommendation was that the bridge needed to be replaced.

The vision of Collier County is in line with the national vision for accelerated bridge construction (ABC), including accelerated project delivery, reduced impacts to residents, improved safety during construction, and implementation of innovative techniques that will provide a durable and high-quality product. Another vision was to develop a modular “standard” bridge that could be used at 11 additional canal crossing sites identified for replacement in the 2008 study.

The replacement White Boulevard Bridge has three equal spans of 42 ft and an overall bridge length of 128 ft, which includes the integral backwalls. The White Boulevard Bridge will accommodate two 12-ft-wide lanes (one in each direction), 4-ft-wide bicycle lanes/shoulders, 6-ft-wide sidewalks, and traffic railings. This

results in a total out-to-out width of 46 ft 2 in. and a curb-to-curb width of 32 ft.

The final design makes use of prefabricated concrete elements for all major portions of the bridge. Cast-in-place concrete elements on the bridge are the approach slabs and the sidewalks. The proposed three-span superstructure consists of 18 modified FDOT, precast, prestressed concrete, double-tee beams topped with a waterproofing membrane and a 3-in.-thick bituminous overlay. The beams are adjacent

deck beam elements, where the top flange of the double tee is used as the structural deck for the bridge.

The bridge has both longitudinal and transverse closure joints. The joints are made with lapped headed reinforcing bars and non-shrink grout. Transverse joints, which are designed to provide live-load continuity at the intermediate bents, eliminate the need for deck expansion joints between the spans. The proposed substructure consists of precast concrete abutment and pier bent caps supported on square precast, prestressed concrete piles. Precast concrete wing-walls are utilized to retain grade around the abutment bent caps.

The contractor was allowed 240 days or approximately eight months to complete this project. Because this is a pilot project, strict time constraints were not applied to the contractor in order to reduce risk, lower costs, and to build experience and an understanding of ABC techniques. In the future, it may be possible to build a similar bridge in 45 days or less. Using conventional construction techniques, it is estimated that this project could have been completed in 10 to 15 months from letting to substantial completion of construction. 



Florida double tee getting ready to be set.