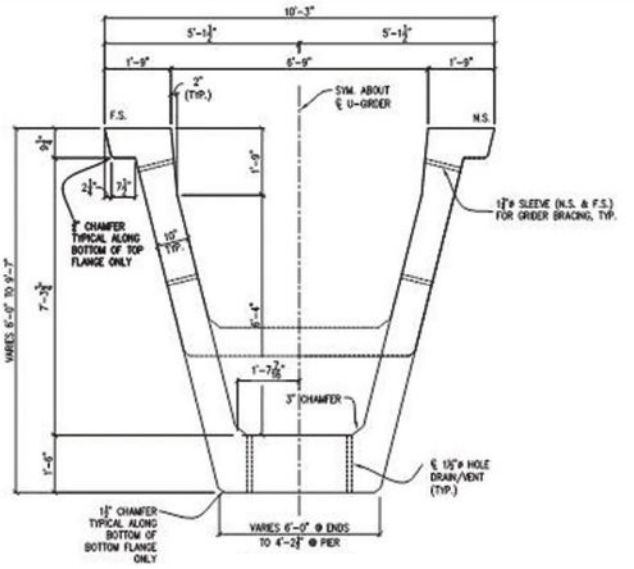


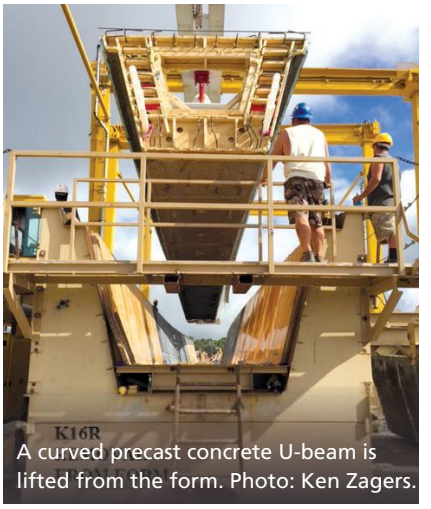
Over-the-road shipping constraints had to be carefully considered due to the 150 ft span and 1200 ft radius of the precast concrete segments. Size limits for hauling the curved precast concrete segments were 14 ft maximum width and 135 ft maximum length. Segments were shipped approximately 20 miles from Leesburg, Fla., to the project site. Cross section of haunched U-beam at the pier is shown at right. Photo: A² Group Inc. Figure: Atkins.

strength (with 6.0-ksi strength required at transfer) was used for the precast concrete U-beams.

Post-Tensioning

The tendon arrangement of the solid rectangular integral pier 11 cap consisted of six tendons centered on the hammerhead cap. A traditional downward concave tendon profile was used to balance the negative moment demand of the pier cantilevers. Each tendon was tensioned to 891 kip and was made up of nineteen 0.60-in.-diameter strands. All tendons were grouted with high-strength, non-shrink grout.

The unit 3 tendon profile is described here as an example of the project's post-tensioning design. The U 72 girders used a total of two bottom-flange tendons and four continuity tendons in each 10-in. web. Flange tendons were swept and transversely spaced at 2 ft on center over supports. At the balanced cantilevered sections over piers 10 and 11, the slab tendons were anchored at the ends of the precast concrete element. Typical to the unit, slab tendons were anchored at each splice location. The 12-strand bottom tendon profiles characteristically ran along the center of the flange and were tensioned to 522 kip each. The



A curved precast concrete U-beam is lifted from the form. Photo: Ken Zagers.

AESTHETICS **COMMENTARY**

by Frederick Gottemoeller

Interchanges are usually designed solely for the routing of vehicles. Their forms result from the sum of the geometries of their roadways and ramps, and their topography from the automatic application of whatever typical sections are assigned to the roadways. The outcome is generally a mechanistic landscape that looks like nothing in nature. The Wekiva Parkway's designers took a different approach: they designed the grading between the ramps as an extension of the rolling Florida topography around the interchange. The roadways and ramps look like careful additions to the preexisting natural topography. The curved and lengthened wing walls register as attempts to preserve the existing ground surface. The user's experience is more like driving through a park than negotiating a high-speed interchange.

Ramp K is the most prominent feature of the interchange, and the innovation involved in its design has paid functional, economic, and aesthetic dividends. The curved and haunched U-beams support the interchange-in-a-park theme by minimizing girder depths at clearance points, thereby minimizing the amount of grading and the length and height of the retaining walls. In addition, the deepening of the U-beams over the piers increases the sculptural interest of the bridge for everyone passing through the interchange. Finally, the ability of just two lines of beams to carry the ramp simplifies the appearance of ramp K from below.

It is exciting to see the use of an integral pier cap for U-beams. By reducing the height requirement at the interchange's key clearance point, the overall height of the interchange was reduced, further supporting the interchange-in-a-park theme. This pier cap may have been more expensive than the other caps, but the savings in grading and walls, as well as the interchange's smaller footprint, offset the higher cost of this one pier. The final result is an attractive driving experience for the residents and tourists in Central Florida that was also the lowest cost design available.