

Wetland Mitigation, Creation, and Preservation

Private developer had to address a host of environmental concerns if it wanted to build a new interchange.

By Sarah Robinson and
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When the Flagler Development Company, a private developer in Jacksonville, FL, needed an interchange built to link a new office and retail development with a major roadway, a host of environmental concerns associated with the construction and its impact had to be addressed. After a carefully planned and executed effort to ensure wetland mitigation—including preservation as well as creation of new wetlands—the interchange was completed, linking Old St. Augustine Road to I-95 in Duval County. Flagler funded the project, which was built to Florida Department of Transportation (FDOT) standards and constructed under the agency's oversight, and then turned the interchange over to FDOT.

Environmental Services, Inc. (ESI, www.environmentalservicesinc.com) was responsible for project development and environment (PD&E) and National Environmental Policy Act (NEPA) assessments for wetlands, water quality, wildlife and habitat, endangered and threatened species, archaeological/cultural resources, and environmental contamination. ESI's work also included wetland delineation; wetland rapid assessment procedure analysis (WRAP) to determine relative wetland functional values; wetland preservation, creation, and upland preservation; and an education program for construction workers with regard to the eastern indigo snake found on the project site.

Included in the 31-acre interchange project was a roadway design that incorporated two loop ramps and two diagonal ramps, tie-ins to the existing roadway, an additional two lanes of a bridge



Built to Florida Department of Transportation standards, oversight was provided by the agency during construction.

on St. Augustine Road, and a stormwater management system. Throughout the design process, a primary emphasis was placed on wetland avoidance and minimization. The final design avoided jurisdictional wetlands to the greatest extent possible with changes made in the design to manage impacts where avoidance was not possible.

These changes were evaluated during the preliminary design phase of the project and included the elimination of ramps proposed for north of St. Augustine Road as well as the introduction of guardrails and 2:1 slopes. Stormwater ponds were also placed in the loop ramps and the pond elevations were raised to prevent the drawdown of adjacent wetlands.

Environmental Assessments

The first phase of the project included a NEPA assessment and PD&E

review. The latter consisted of an assessment of various engineering and environmental factors to receive environmental clearance from the Federal Highway Administration (FHWA). Included in the PD&E was a preliminary engineering evaluation of numerous environmental variables that took into account the wetlands and endangered and threatened species. In addition, an analysis was done to determine how to minimize impact on the environment from the required interchange ramps.

In all, there were four quadrants in which the ramps could have been constructed. The northern two quadrants where St. Augustine Road crosses I-95 feature a high-quality wetland system consisting of a mature hardwood wetland that encompasses several hundred acres. These areas could not be used as part of the design for the ramps and

interchange without incurring high construction costs and extensive environment impact. Consequently, the project's engineers designed the ramps to access both northbound and southbound lanes of I-95 using a combination loop and diagonal ramps only in the southern quadrants.

In fact, the solution called for the centermost ramps to be loops and for the outer ramps to be diagonals to accommodate the environmental concerns. This approach enabled the ramps to be designed to FDOT and FHWA safety and speed standards while avoiding the wetlands in the northern quadrants and minimizing wetland impact in the southwestern part of the project site.

In addition, there was another project constraint in the northwest part of the project site—a 400-acre nature park owned by the city of Jacksonville. Once again, construction of the ramps in the southeastern and southwestern portions of the site proved to be a viable solution.

Private Funding

Flagler Development's funding of the project required the mitigation of the wetland impacts without the use of FDOT's Mitigation Payment Program. Under that program, FDOT would write a check to the Florida Department of Environmental Protection based on the acreage of the wetland impacts, which were determined by the footprint of the entire interchange project. A total of 13.27 acres of wetland were filled to create the platform on which the inter-



Two loop ramps, two diagonal ramps, tie-ins to the existing roadway, and two lanes of a bridge on St. Augustine Road were included in the interchange project.

change and stormwater management system were constructed.

Instead, the cost of the project will be repaid to Flagler over time from county tax revenues. In addition, because it was privately funded, Flagler had to mitigate the loss of the value and function of the wetlands through creation of new wetlands in addition to upland and wetland preservation. This was accomplished by using a large tract of land for mitigation and through the creation of 13.3 acres of wetlands, which was accomplished by scraping down or excavating upland areas while engineering the proper water levels for mitigation.

This approach paved the way for ESI to employ several innovative solutions. For example, upland islands, one of which is half an acre, were left undisturbed within newly-created wetlands.

Each island was created by isolating large live oaks, some of which have diameters ranging in size from 40 to 60 in. Within the 13.3 acres of new wetlands 5,344 wetland trees were planted, including bald cypress, blackgum, red maple, sweetgum, loblolly bay, and swamp bay.


Preservation took place on a 87.28-acre wetland site of forested hardwood swamp, including

wet pine plantations and two cypress domes. A 30.63-acre tract of pine flatwoods was also preserved.

Another project challenge involved the southeast quadrant, which once served as a staging area during construction of I-95 in the 1960s. Soil in this area had been disturbed with the growth of grass and small pine trees and the presence of gravel. A site assessment was conducted to determine if any of the soil had become contaminated over the years. Follow-up testing revealed no contamination.

Meeting Mandates

To complete a final design for the interchange, the environmental team and project engineers worked hand-in-hand to facilitate environmental permitting at the state and federal levels. Wetland mitigation requirements had to be negotiated, an exacting undertaking for a project of this size. The agencies in this case were the U. S. Army Corps of Engineers and the St. John's River Management District, both of which jointly assessed the situation and determined the number of acres that needed to be created and preserved.

ESI's involvement began in late 1999, and construction got under way in 2002. The project has proven to be an environmental success, resulting in a new interchange that effectively serves as a link to the Flagler development as well as a new southern gateway to Jacksonville. 

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Satisfying wetland concerns was key if the developer was going to be permitted to construct the new interchange.