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FDOT Embarks on 'Ultimate' Project

Crews in Orlando have begun work on a landmark project that will transform central Florida. I-4 Ultimate calls for rebuilding more

than 20 mi. (32.1 km) of Interstate 4 from Kirkman Road in Orange County to State Road 434 in Seminole County. The expected cost to complete the design and construction is \$2.32 billion.

“I-4 was originally built in the late 1950s and early 1960s, so our infrastructure is aging,” said Loreen Bobo, P. E., Florida Department of Transportation (FDOT). “Many of the bridges have reached their design life, and we are unable to widen the bridges any further without doing a complete reconstruction. So, here we are, completely reconstructing 21 miles of the interstate that runs through the heart of Orlando. While we’re at it, we are going to add four lanes of capacity in the form of express lanes, two in each direction. Fifteen interchanges will be redesigned and reconstructed. Over 140 bridges will either be added, reconstructed or widened.”

In February, FDOT broke ground on I-4 Ultimate, which was designed to change the way motorists commute in central Florida. The Project Development and Environmental (PDE) study was started in the late 1990s.

“Design and ROW acquisition began in the early 2000s,” said Bobo. “Toward the late 2000s, the construction phases of the six design projects that made up this 21 miles were not funded. In 2011, FDOT decided to look at pursuing a public private partnership (P3) procurement. During the review, we performed an analysis to understand how long it would take to build the 21 miles using the P3 procurement versus traditional funding methods.

“Design officially got underway in October, and we approved the corridor master plan in mid-February.

Now the big effort is getting to 90 percent plan sets. To date, we have approved several early works packages that are allowing clearing and grubbing and erosion control efforts to begin. By summer, we expect to be well under way.

“We are just starting the clearing and grubbing effort to make way for the utility relocations, drainage improvements, and eventually the reconstruction and widening of I-4. In the coming months, we will begin pile driving efforts to begin the bridge work, with over 140 bridges on the project. This represents a significant amount of work.”

The project involves two water management districts, seven governmental jurisdictions, a partnership

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with CFX Way, typical section change, 17 major interchange improvements and surface street improvements. Bobo said the maintenance of traffic is probably the most complicated aspect of the project.

“Coordinating 21 miles of reconstruction of a major interstate which carries close to 200,000 vehicles a day is no small undertaking,” said Bobo. “Add to that the requirement to keep the existing capacity available during peak travel times. We are also increasing the design speed on the project, which is changing the grade of the roadway in many locations. This further complicates the maintenance of traffic. Our ultimate goal is keeping everyone safe. Everyone includes drivers and passengers in vehicles, as well as the men and women working to build I-4 Ultimate.

Maintenance of traffic will be one of the biggest challenges, according to Bobo.

“I-4MP and their contractor, SGL Constructors, have divided the project into four separate area projects, which are coordinated very closely. While there are designer and contractor team members assigned to the different areas, ultimately they must all work together.

“The next step with maintenance of traffic is getting that information out to the public. We knew early on that keeping the public informed about the project would be a key to the success. We all know that completely reconstructing and widening an interstate while maintaining traffic during peak times so that everyone’s daily lives can keep going would be a challenge. The construction is not going to happen overnight, so our goal is to share as much information as possible. The key is making sure that information is correct and shared in a timely fashion.”

Crews from Bob’s Barricades, the largest privately owned barricade company in the nation, began installing advanced warning signs in early March. The signs will help alert motorists when they are entering the work zone. SGL Constructors is required to place these signs on roads that lead to the I-4 Ultimate project limits. From Kirkman Road in Orange County to State Road 434 in Seminole County, more than 1,000 signs had to be installed.

As for the scope of the I-4 Ultimate project, Bobo said the team would be crucial to get the job done.

“We have a really great team of folks who bring with them many different experiences. Many have been fortunate to work on other large-scale design build projects, which is invaluable. My immediate team and I meet regularly to make sure that we have coverage during meetings, understanding who is working on what hot topics, and making sure we are keeping the important items on our radar.

“It’s very easy to become overwhelmed and forget about something that was a hot item an hour ago and has now become surpassed by another,” said Bobo. “I have two notebooks with me at all times where I keep meeting notes and keep track of items to follow up on. It’s amazing how much we handle in one day.

“The I-4 Ultimate project is not just about upgrading the aging infrastructure, improving the safety of the corridor and adding capacity. It’s also about building a signature corridor. FDOT challenged the four proposers to be innovative and provide a signature corridor. I-4 Mobility Partners and their team took this to heart, and have provided a very high level of aesthetic detail to the project.

Said Bobo, “You will see consistency in design and color schemes throughout the 21 miles. You will see attention to detail in the landscape architecture and enhanced aesthetics. For example the new Maitland Pedestrian Bridge crossing I-4 will be an signature element within the corridor.”

Skanska is a 50 percent funding partner with John Laing on I-4 Ultimate, as well as one of three contractors on the project. SGL Constructors consists of Skanska, Granite and Lane.

“The express lanes will be operated with dynamic tolls which will be adjusted to improve traffic flow throughout the corridor,” said Brook Brookshire, project director and vice president, SGL Constructors. “The I-4 Ultimate makeover will give central Florida a competitive edge when it comes to attracting new businesses and economic growth to the region. At the peak of construction, we estimate the project will have between 1,500 to 2,500 craft and salaried workers. Overall, this is the largest and most complex infrastructure project underway in the state of Florida to date.

“SGL Constructors is currently in the beginning stages of this six-year project. We are starting to stage

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the heavy equipment and cranes along the corridor, which is comprised of four segments of I-4, each segment ranging from four to six miles in length. Our construction team is clearing the right-of-way along the existing interstate, installing erosion control features, setting up our work zone barriers and signage and starting the relocation of the conflicting utility lines. HDR Engineering and Jacobs Engineering, the projects design joint venture, has approximately 500 design staff working on I-4 to complete the design packages, and SGL has also taken charge of the operations and maintenance of the 21-mile corridor, including service patrol.”

Brookshire said a cornerstone of the project will be an iconic curved pedestrian bridge utilizing a tubular arch main span with a cable suspended walkway along Maitland Boulevard.

“It will vault over I-4, creating a striking image while also increasing pedestrian safety and mobility. We are also incorporating numerous aesthetic elements that will visually enhance the corridor, including bold landscape designs, accent lighting features, and eventually permanent art installations, some of which may be built using recycled materials.”

The extensive revamping of the Maitland interchange has begun, as crews work to remove the large dirt mound on the eastbound side of the highway. The large pile was originally built to reinforce the spot after an ancient sinkhole was found during an earlier improvement project. To stabilize the area, workers had pumped grout into the sinkhole. The supportive material eventually filled an underground area that was as large as a football field. With the ground now stabilized, the mound on top is no longer necessary. The dirt from the mound is being placed in a nearby field. As construction on I-4 Ultimate continues, the excavated dirt will be used to build up the base of the new roadway.

“The critical path for construction of this project is the I-4/SR 408 interchange near downtown Orlando where SGL Constructors will build five new flyover ramps along with new SR 408 bridges over I-4,” said Brookshire.

Machinery being used at this stage of the project includes backhoe loaders, excavators, dozers and rubber tire loaders for clearing the right-of-way and installing erosion control features. Soon, crews will start to work with more heavy equipment, including crawler cranes and pile driving equipment for the bridge work.

“We are simultaneously working on all four main area segments of the project, which we have named the Attractions, Downtown, Ivanhoe and Altamonte segments. This requires a tremendous amount of communication and collaboration among the project partners. SGL and I-4 mobility partners have established a central hub administrative office in Maitland for that collaboration and four field segment offices along the I-4 corridor. FDOT also has a field office located here which helps with the collaboration of the entire team.”

Brookshire described I-4 Ultimate as one of the most important projects of his career.

“I’m so proud to be working on it today to bring it up to meet current industry standards and better accommodate the growing population of Florida, as well as the 60 million visitors who come here every year. I also believe that because we are creating so many unique visual experiences throughout the corridor that both the driver and passengers will benefit greatly. The driver will realize greater reliability, reduced travel times, better traffic flow and improved visibility, while passengers especially will enjoy an enhanced aesthetic experience.

“Our goal is to create a signature corridor that connects communities, improves economies and enhances livability throughout the region. It is being designed and constructed to reflect the best of Central Florida’s local history and the unique character of its communities.”

Michael Gwynne, P.E., resident engineer, HNTB, explained that HNTB’s role as the Construction Oversight Services (COS) consultant is to monitor the performance of the concessionaire, their contractors and their construction quality assurance firm in the execution of their obligations as it relates to construction of the project, and the operations and maintenance of the I-4 corridor during the construction period.

“The goal of our contract is to validate that the concessionaire and their team are complying with the contract and the various quality processes, procedures and plans put in place. In addition, we support FDOT in their administration of the program.”

Currently, the concessionaire is at peak production in terms of their design efforts.

“The team has nearly completed the installation of all advanced warning maintenance of traffic signs, a significant undertaking, given the 21-mile corridor and numerous cross streets within the project limits. The project has also begun corridor wide erosion control installation, and numerous areas have begun clearing and grubbing and utility relocation efforts, said Gwynne.

According to Gwynne, the safety and mobility of the traveling public is the project team’s number one concern.

“The I-4 Ultimate project is essentially a full build-out of the interstate’s typical section to the right-of-way line, and is on average approximately four feet higher than the existing roadway. As such, we have to safely build the improvements on top of the existing facility while still maintaining the same number of general use and auxiliary lanes. Given the geometry changes being incorporated into the upgraded facility to support an increase in speed from 50 mph to 60 mph, the associated logistics of maintaining the same number of lanes and constructing the new improvements will be very challenging, as the horizontal and vertical profiles of the existing and proposed roadways and bridges are very different.”

“We’re fortunate to have a very experienced staff, with large project experience similar in scope and scale to the I-4 Ultimate project. We’ve also organized ourselves into specialty disciplines such as materials, structures, roadway, etc. This allows the team to divide and conquer in order to keep pace with the demands of the project. We have also developed a number of technology tools, including a specific database for all the contract requirements associated with the I-4 Ultimate project, which allows the COS staff to access and audit thousands of contract requirements with a few clicks of the mouse.”

The project team must develop the design of the roadways and bridges to the necessary engineering standards, in order to ensure public safety and also deliver the necessary durability and performance of the planned improvements on a ‘just in time basis,’ in order to support the aggressive construction schedule.

“Similarly, the contractors need to ensure their work force is adequately staffed, equipped and ready to begin the work in a safe and expeditious manner, while still minimizing the impact of the work on the traveling public, the adjacent residents and businesses throughout the corridor.

“On a project of this size and complexity, methodical, detailed and deliberate planning is essential, as all the pieces of the puzzle need to be clearly defined early on, and scheduled well in advance of its implementation,” said Gwynne. “The schedule is still under development, but includes well over 20,000 items, and is still growing.”

For Bobo, I-4 Ultimate is a once in a career opportunity.

“They don’t teach you in the classroom how to deal with all of the non-technical, public relations type issues that come up, and you learn those best through experience. There’s a lot of pressure when you are overseeing a high-profile \$2.3 billion project, but I will say that I wouldn’t want to be anywhere else. I’m excited to share with my two young sons my project, and how mommy is helping to shape central Florida.”

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