

# Why I-4 is the ultimate

As work gets underway on our largest P3 project, you probably have lots of questions – here are some answers

There's much to be excited about with Skanska's latest public-private partnership project, Florida's I-4 Ultimate. There's the \$2.3 billion design-build contract that encompasses widening and reconstructing 21 miles of interstate highway, and building or modifying an incredible 140 bridges. I-4 Ultimate provides our team with a 40-year operations and maintenance agreement, and it stands to be the largest and highest-ranked project certified by the Envision sustainable infrastructure rating system. Even more, I-4 Ultimate is Skanska's largest P3 undertaking. This massive project is needed because I-4 – a crucial trans-Florida link connecting Tampa and Daytona Beach – becomes an expanse of red brake lights during the Orlando area's rush hours, a situation worsened by the highway's outdated 1960s-era design. When our team completes construction in 2021, the Orlando stretch will be a better-functioning highway – with safer curves, improved access to connecting roads and all new driving surfaces – and a more aesthetically pleasing corridor through artful bridge design, lighting and landscaping.

Beyond those enhancements, I-4 Ultimate will offer a new travel experience: Those willing to pay to bypass normal traffic will have access to the four dynamically tolled express lanes we're inserting in the highway's center median.

"This is something that all of the communities along the corridor – as well as the commuters and tourists using the highway – will certainly be proud of," said Brook Brookshire, project director for our SGL Constructors joint venture. "It'll be a showpiece entrance to Central Florida."

Added Cesar Souza, CEO for I-4 Mobility Partners, the Skanska-led developer of this project: "I-4 Ultimate will improve the daily lives of many Floridians and will further position Florida as a leader in P3s. We're honored to be making this possible."

This project's impact will go far beyond blacktop and concrete. Our team will be creating up to 2,000 construction jobs, and providing hundreds of local residents with job training. Also, central to our strategy is tapping the expertise and building

**This image shows how I-4 will look near downtown Orlando. "I-4 is America's largest P3 to date, and the bidding was incredibly competitive," said Karl Reichelt, executive vice president. "It's a huge win for Skanska and also for Florida."**

the capacities of small-, minority- and woman-owned businesses. Outreach to such potential partners began during the pursuit phase, and is even greater in intensity now.

With the I-4 Ultimate project of such importance, Coast to Coast sought out answers to the questions many of you might have. Here is what we learned:

#### What's behind the I-4 Ultimate project name?

Our client, the Florida Department of Transportation, dubbed this project the "ultimate" because it represents the final effort to physically expand this highway. Once SGL Constructors completes its work, FDOT doesn't see future possibilities for adding lanes.

#### Why is I-4 Ultimate a P3?

On its own, FDOT did not have adequate funding to undertake this project in a timely manner. An FDOT study found that if the agency built these I-4 improvements as public money became available, the work would take 27 years to complete. By contracting via a public-private partnership, FDOT is able to have the full project designed and constructed in less than seven years.

Through this P3 arrangement, FDOT gains the support of two companies – Skanska and John Laing, which form project company I-4 Mobility Partners – that are investing equity and financing much of the project, and are assuming the risk for constructing the project on time and within budget, among other responsibilities. Skanska, for instance, will invest up to \$73 million of equity. In turn, we secure a substantial construction project and gain a long-term concession that includes regular "availability" payments once the tolled lanes open to traffic. (More on availability payments later in this story.)

As part of the financing and reflecting the national priority of this project, our team secured

the largest-ever federal loan for a P3, one for \$950 million through the Transportation Infrastructure Finance and Innovation Act.

#### How did our team win this project?

Early team formation and early client engagement provided advantages, as did much collaboration among project partners.

"Our team participated in the first industry day, back in 2007," said Souza, who led the proposal development. "We showed the greatest, longest continual interest in the client, their needs and the project. And we aligned with the right partners."

For finance and development, the right partner is John Laing, a British firm that Skanska has done P3s with globally. For construction, our partners in SGL Constructors are Granite and Lane, which bring additional strength in Florida and nationally. Our operations and maintenance provider Infrastructure Corporation of America currently manages an extensive network for the Florida Turnpike, adding to our team's Sunshine State credibility.

There was a tremendous amount of cohesion and collaboration among these partners. Of particular importance was the open and direct communication between the development and construction partners. This enabled honest conversations and innovative, big-picture thinking that considered the interests of the project as a whole. Key to such one-team thinking was Skanska having both construction and infrastructure development expertise in the same company.

The value of this collaboration was realized with the successful interpretation of FDOT's desire to have a signature corridor. This meant a unique design, one with a Florida feeling in its use of landscape and aesthetic features. Throughout the pursuit, our team was deciphering

what solutions should be provided to achieve the signature vision. One critical factor was that FDOT was offering 15 valuable points during the proposal scoring to those teams that presented the best features. Such features might save money, reduce the construction schedule, improve safety or provide other benefits, including aesthetics and sustainability. Achieving those points had to be balanced with FDOT's overarching goal for a low price and fast schedule.

During the pursuit, we conducted extensive outreach with key project stakeholders, such as the City of Orlando, the Greater Orlando Aviation Authority and the Walt Disney and Universal resorts. Resulting from this broad outreach, we demonstrated to FDOT that we had collaborated with stakeholders that are important to them. We gained insights from these sessions that we used to select meaningful features to include, such as ramps directly connecting the tolled I-4 express lanes to State Route 408 (a major east-west tolled highway); capacity improvements through additional auxiliary lanes and turn lanes; pedestrian bridges; enhanced aesthetics, including bridge architecture and landscaping; and a \$1.5 million fund for artwork along the corridor. Our team found the right combination, achieving 14.75 of the available 15 points.

"FDOT told us that we nailed it," said Jon Walker, program project manager. "We gave them exactly what they were looking for in terms of enhancements and their vision for a signature corridor."

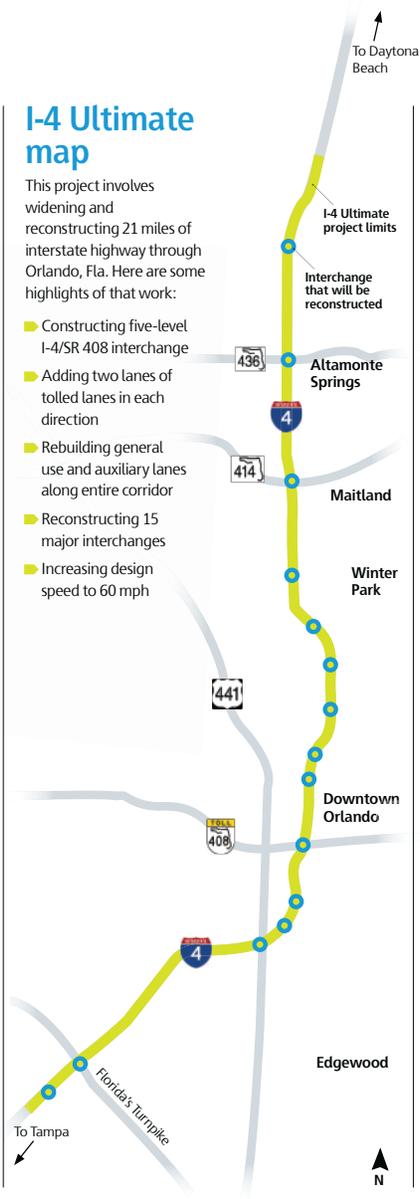
#### What's our overall approach?

To manage this extensive project, our team divided the 21 miles into four sections of four to six miles each: Attractions, Downtown, Ivanhoe and Altamonte. In each area, we're establishing field offices staffed with 30 to 50 project management staff.

## I-4 Ultimate map

This project involves widening and reconstructing 21 miles of interstate highway through Orlando, Fla. Here are some highlights of that work:

- Constructing five-level I-4/SR 408 interchange
- Adding two lanes of tolled lanes in each direction
- Rebuilding general use and auxiliary lanes along entire corridor
- Reconstructing 15 major interchanges
- Increasing design speed to 60 mph



The project headquarters, called the Hub Office, is a 42,000-square-foot building along the route in Maitland. Opened this fall, it will house approximately 160 people. All key project partners are co-located here, which promotes rapid and collaborative decision making.

#### What are the biggest challenges?

The project's location and length are the main technical challenges. The corridor passes through downtown Orlando, with its dense concentration of people and businesses that the project must safely accommodate. Beyond Orlando's core, our team must ensure an Injury-Free Environment over I-4 Ultimate's 21 miles of active interstate. The most complicated aspect of work is building a five-level interchange downtown to connect I-4 and SR 408.

#### What are some ways we'll ensure safety?

As with all Skanska projects, instilling and maintaining an IFE culture is key. This is even more important on I-4 Ultimate, given the significant number of people being hired who haven't been part of Skanska.

To advance a proactive safety environment, our team selected a senior operations person to be safety director: Bill Reed, a project executive formerly overseeing our Interstate 275 reconstruction in Tampa. Reed is known for being a safety champion.

"Bill can connect with the workforce because he's been in the field doing the same things that they're doing," Brookshire said. "And hopefully, they can connect with him in the same manner: they know this is a guy who has done this before, and they know he's looking out for their well-being."

Reed will oversee an extensive safety training program that will be conducted for everyone, from superintendents to laborers who have never before worked in construction.



This training will include how to properly develop plans that detail every step of each activity. These sessions – which will be ongoing throughout the project – will be conducted at a training complex with a dedicated safety trainer.

#### How will we staff this project during construction?

SGL Constructors will have about 220 management staff, and at the project's peak there will be 1,500 to 2,000 craft employees (both direct hire and through trade contractors). Our team has had no problems finding people to fill the management roles. However, they expect it will be a huge challenge finding that many craft workers, given the large number of workers required and the numerous other transportation projects underway in Florida.

To ensure our team has the needed skilled workers, this fall they started a tremendous outreach effort, even though those positions won't be needed until the first quarter of 2015, when construction operations begin. This effort will include a dedicated craft recruiter and a separate office for people to apply for craft positions and be interviewed. Local craft candidates are preferred.

#### How is collaboration integral to our I-4 work?

Robust collaboration across business units and geographies was essential

to developing the winning proposal. Infrastructure Development enlisted the help of key global employees. USA Civil brought in resources and relied on expertise from not only the Southeast region, but also from the West and Northeast. USA Building supported that collaboration by enabling the pursuit team to operate from its downtown Orlando office, close to both the client and the I-4 corridor.

That sharing continues today with the project underway. Among those who transferred to I-4 from elsewhere in our company are Souza, who shifted from Infrastructure Development to be I-4 Mobility Partners' CEO; John Crecco, vice president of field operations, who transferred from the Northeast; and Mason Ford, equipment services director, who came from the West.

#### How much equipment is required?

I-4 Ultimate requires the biggest equipment fleet Skanska USA has ever assembled: 250 to 300 pieces of heavy equipment – including excavators, loaders, cranes and backhoes – and another 220 pickups and SUVs. The price tag for all this? An estimated \$125 million. That doesn't include the 90 to 100 on-road dump trucks that are also on our team's shopping list. Most of the equipment and vehicles will be

new and acquired through strategic leasing methods.

With all this, the most impressive number might be the projected \$56 million equipment fuel bill, plus even more for those dump trucks.

#### How is BIM/VDC being used?

Our team expects to use the project's BIM model to analyze the constructability of the I-4/SR 408 interchange. Already, we're using the model to analyze a significant new maintenance-of-traffic plan for that junction. That work will then extend to the rest of the project alignment.

"I believe we will be able to identify cost-saving changes that were otherwise indiscernible at the time of bid, given the huge volume of information to process during that period," said Paul Pedini, vice president.

#### Why does Envision matter?

To help differentiate our proposal, our team committed to achieving the highest standard possible under Envision, the leading sustainability rating system for infrastructure projects. That I-4 will be one of the first projects pursuing this certification, that it's the largest to be doing so, and that our team is targeting Platinum certification all make this very significant. Beyond recognition, Envision will provide a framework for our team to share sustainability best practices. (See page 7 to learn about how Skanska is helping lead Envision's development.)

Envision has five areas under which points are assigned: quality of life, leadership, resource allocation, natural world, and climate and risk. Much of what Envision requires is already part of how FDOT defined and planned this project. Still, key aspects of achieving enough points to attain Platinum status include such Skanska construction best practices as re-using nearly all waste materials and balancing earthwork operations so excavated materials can remain on

**Building this five-level downtown interchange to connect I-4 and State Route 408 is the most complicated aspect of work.**

#### Who is on our I-4 Ultimate team?

- Project developers and leaders: Skanska Infrastructure Development and John Laing
- Construction joint venture: Skanska USA Civil, Granite and Lane
- Design joint venture: HDR and Jacobs
- Operations and maintenance: Infrastructure Corporation of America

site. The lifecycle thinking inherent with P3s also provided us with important points, as does using a customized version of Skanska's environmental management system.

#### What are our operations and maintenance responsibilities?

Beginning this February and for the next 40 years, I-4 Mobility Partners is responsible for operating and maintaining the project's 21 miles. Everything is included, such as repairing potholes and guardrails, inspecting and fixing bridges, and mowing grass. This work also includes providing roving service patrols to help stranded motorists.

Part of why governments are attracted to P3 projects is that the arrangements ensure a high level of service. With I-4, for example, our team is obligated to be on the site of accidents within 15 minutes, remove any broken-down vehicles within 30 minutes, temporarily restore lighting that has fallen below acceptable levels within 30 minutes, and temporarily patch all blacktop potholes within three days.

#### Did we consider maintenance and lifecycle costs when designing this project?

P3s give the contract holder the incentive to consider the whole-life costs of a project, not just the initial design and construction costs. For I-4, our team performed lifecycle analyses of four key project aspects: pavement material, pavement marking, lighting and bridge structure type. For example, steel tub girders were found to be most economical over 40 years for the curved flyover bridges, surpassing the concrete superstructure alternative after consideration of the post-tensioning maintenance costs. The analyses were led by Skanska lifecycle experts from London using models developed in-house. These studies utilized



Orlando's Bridge District will come alive at night with aesthetic LED lighting, an enhancement offered by our team.



Distinctive landscaping and bridge architecture at project boundaries let travelers know they have entered the new I-4.



This 700-foot-long curved pedestrian bridge over I-4 is our team's enhancement that our client said they liked the most.

#### I-4 Ultimate key facts

- \$2.3 billion design-build contract for our joint venture (Skanska's 40 percent share is about \$900 million)
- \$73 million maximum Skanska Infrastructure Development project investment
- 11,000-plus activity schedule
- 1,500 to 2,000 peak craft employees
- 53 new bridges, 74 bridges replaced and 13 bridges widened
- \$56 million project fuel expense for core fleet, not including dump trucks
- 2015-2021 construction timeline
- Largest project targeted for Platinum certification under Envision sustainability rating system

input from workshops with the full-range of team members present: development/finance, design, construction and operations.

#### Why are availability payments important to I-4?

In the U.S., this is Skanska's first P3 project for which our compensation is partly based on availability payments, which are dependent on the roadway being available and operating according to strict service standards. Availability payments are becoming more common for P3 projects, compared to the alternative in which the P3 contract holder handles tolling and takes on the risk of traffic performing to expectations. Skanska's Elizabeth River Tunnels project in Virginia is an example of such a market-risk project.

#### How will this project benefit Central Florida?

Our team has a goal of awarding more than \$250 million of work during the design, construction, and operations and maintenance phases to small-, minority- and woman-owned firms. "That's a challenge, but we look at this as a real opportunity to infuse economic empowerment into these local communities," said Rodney Renix, compliance officer.

Making sure the biggest pool of firms have access to I-4 contracts requires much outreach and other efforts. This fall, for example, our team held an eight-week program to educate small business owners about bonding, a hurdle for many such firms in procuring contracts. Another local benefit is that our team will be providing on-the-job training throughout the project's duration so that 250 formerly unskilled workers become proficient in a construction craft.

"We have made a commitment to do something great here, and we intend to deliver on that promise," Renix said. ■

# Lifecycle thinking

Beyond construction, how we can help clients address a key challenge

When Skanska finished construction and turned over the 293,000-square-foot Montlake Tower, the work was only beginning for the University of Washington Medical Center. Along with the keys, we gave our client 46 three-inch binders of building information and a two-foot-thick stack of paper drawings, all to help them operate and maintain the patient bed tower.

Yet like many owners, UW didn't really want all that paper. That's because the medical center uses facility management software to manage building upkeep. It would take the medical center two-and-a-half years to enter just a small portion of the Montlake Tower data into its software, owing to the huge amount of manual work required.

"Historically, we haven't done a real good job at the transition" from

construction to operations, said Jeff Angeley, senior construction manager with UW's major projects group, expressing a statement that is true for nearly all owners.

The information gap between design/construction and then facility operation creates a huge burden for building owners, as the Montlake Tower example shows. That gap also creates a great opportunity for Skanska to help clients solve a key challenge. That gap has become so exposed because of the increased prevalence of building information modeling – an important element in potential solutions – and the growing recognition that most of a building's cost over its lifetime is from operations and maintenance, not construction. Owners want to focus on what creates the most value for them.

Lifecycle management - one

## 39

Percent of owners currently using BIM either significantly or moderately as a facilities management tool. That figure is expected to hit 69 percent in three years, according to a recent industry survey.

of several terms that refer to this thinking - has huge potential to reshape how buildings are delivered. Just as BIM/VDC was an emerging practice some five years ago but is now common for design and construction, finding ways to smartly package design and construction data for facility management uses will similarly be standard practice five years from now, said Mike Clark, Skanska national manager of VDC project support.

With more owners looking to take approaches similar to UW, here are examples of Skanska's lifecycle management work, and some key points to help owners make the best choices on this topic.

#### Facilities management solutions

**Electronic O&M delivery**  
The initial step in helping clients maintain their facilities

#### Levels of facility management engagement

##### Bridge to BMS

- **What is it?** Linking the building management system (BMS) to BIM models and electronic project information
- **Benefits:** Provides real-time information on equipment and systems, helping drive higher operating performance

##### Link O&M information to a BIM model

- **What is it?** Linking BIM models to such electronic project data as operations and maintenance (O&M) material and warranties
- **Benefits:** A visual interface makes it more intuitive for clients to find and access relevant building information

##### Information management

- **What is it?** Electronically providing such project information as O&M data, warranties and CAD/BIM files
- **Benefits:** Electronic format makes it easier to access key information, saving time for building management staff