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The Mosaic Company, the world’s leading producer of phosphate-based crop nutrients and one of Florida’s largest landowners, had a vision of showcasing the potential of previously mined land while creating needed job opportunities. The result of this commitment to environmental and economic sustainability is Streamsong Resort, a luxury golf, spa, and nature-based retreat nestled within 16,000 acres between Tampa and Orlando in rural Polk County, Florida. The project consists of a three-story golf clubhouse and a six-story, 305,000-square-foot lodge together featuring 228 luxury guest rooms, conference center, full-service spa, lakeside infinity pool, fine and casual dining restaurants, a rooftop bar, and outdoor amenities including guided bass fishing, sporting clays, tennis courts, and hiking and birding trails.
WHAT LIES BENEATH

It’s not just the resort’s abundant natural beauty that makes Streamsong unique, but also what lies beneath the surface—literally. Visitors to the site would likely be surprised to learn of the area’s history as a phosphate mine given the verdant 18-hole golf courses and stunning resort facilities built on the previously mined site. The project team worked hard to create a vacation destination, applying science and engineering to produce a work of art. If the landscape proved challenging, so too did the regulations and standards that governed work on the development. Mosaic’s mining activities are regulated under Mine Safety and Health Administration (MSHA) safety regulations rather than those of the Occupational Safety and Health Administration (OSHA)—a regulatory regime with which PCL is far more familiar. The project team was able to build a relationship with Mosaic by demonstrating the merits of PCL’s rigorous safety program, eventually winning the client’s trust and support for PCL’s safety policy as the governing safety program for the project.

A FOCUS ON SUSTAINABILITY

PCL helped execute Mosaic’s vision by creating a destination that celebrates the region’s ecology and heritage. Streamsong celebrates the “natural” Florida most visitors to the state never get to see. The resort is home to a rich assortment of wild animals, including deer, quail, wild hogs, otters, numerous species of birds, and—of course, it being central Florida—a few alligators.

In addition to building a stunning, modern resort that invites guests to appreciate the impressive biodiversity of the area, the design and construction focused on sustainability at each stage of the build and throughout the project’s lifecycle, and factored in environmental beauty and economic viability. Support systems for the resort, such as its water and wastewater treatment plants, help minimize the impact of the development on the environment. Ultimately, Streamsong demonstrates the potential for smart, sustainable development to restore land to its natural state and PCL’s ability to make positive contributions to the areas in which we operate.

PHOTO: Recognized as two of the top 100 golf courses in the US by Golf Magazine, Streamsong® Blue and Streamsong® Red feature a Clubhouse with veranda overlooking the lake.
THE PROJECT

The original Gilmerton Bascule Bridge was built in 1938 to extend the highway across the Elizabeth River in Chesapeake, Virginia. As the bridge neared its life expectancy, PCL was contracted in 2009 to replace the bridge with a new 1,908-foot-long, vertical lift bridge. The project features 12-foot, diameter-drilled shaft foundations, 225-foot structural steel lift towers, and a 2,400-ton lift span that provides clearance up to 135 feet when fully opened. The bridge was built in partnership with the Virginia Department of Transportation (VDOT) as part of the Full Stakeholder/Joint Project Risk Management Program. This program, a first in the industry, provides a collaborative, project-focused process for successful project delivery. The innovative process fosters a risk-aware culture among all stakeholders, creating the foundation for proactive management and saving VDOT money, time, and resources.
TRANSITIONING FROM OLD TO NEW

Making sure disruptions to 35,000 daily motorists were minimized was of utmost concern to the project’s owner, and PCL worked tirelessly to meet the expectations of both the client and the residents of Chesapeake. Traffic flow was maintained by employing a unique approach to bridge construction: keep the old bridge open while simultaneously building the components of the new structure below and above the old span. The new bridge was constructed in parallel alignment underneath and over the existing bridge and essentially “swallowed up” the old one as construction progressed. Tower construction was performed in the middle of the night to ensure the bridge was open for traffic the next morning. The 2,400-ton lift span was constructed off-site and floated in by barge seven miles through the Port of Hampton Roads; the roadway reopened in half the allotted time, and motorists can now look forward to even fewer bridge disruptions, thanks to the increase in vertical clearance above the river below. Through close collaboration between all stakeholders, the bridge’s improved design means more vessels will be able to pass below with fewer bridge openings.

PHOTO: The bridge construction was carried out in three phases to ensure disruptions to motorists were minimized. With each phase, traffic flow was a top priority.
PHOTO: The original Gilmerton Bridge was constructed in 1938 as a twin bascule span, four-lane bridge. The bridge served Chesapeake residents for more than 70 years before reaching the bridge system’s life expectancy.

USING ZERO-VIBRATION TECHNOLOGY

Knowing that an active railway bridge adjacent to the site could be affected by construction, PCL took innovative steps like importing zero-vibration technology to install the 12-foot-in-diameter drilled shafts by pushing temporary casings into the ground and then excavating the soil from within the casing. These were the largest shafts built in the United States using this method. The project team further leveraged technology to create a cost savings of $420,000 for the client, demonstrating that solutions to construction challenges need not make the project costlier. This proactive approach to managing disputes by anticipating challenges ahead of time sets the standard for PCL’s relationship with its building partners.

Visit PCL Construction’s YouTube channel (www.youtube.com/PCLConstruction) to watch the video on the Gilmerton Bascule Bridge Replacement. The video chronicles the very technical, complex, and extreme precision required as part of the float-in and placement of a 2,400-ton lift span for the new bridge.

“Everyone involved in this project should be proud of successfully delivering such a complex project. The Gilmerton Bridge serves as a model for how this can be done. For three years, we worked two shifts, mostly seven days a week. The team never once missed a rush hour opening. That is commitment of this team to what’s important to the owner. I want to thank and credit PCL’s leadership for the float-in and for this project. Your dedication to this project has been outstanding and you as well as your team should be proud, because we are proud of you.”

Marc Papini – VDOT Project Manager, Parsons Brinkerhoff
THE PROJECT

In a life-threatening emergency, every minute can be crucial to the successful outcome for a patient. Saskatchewan’s first rooftop heliport at the Regina General Hospital provides the Regina Qu’Appelle Health Region with the ability to utilize air ambulance service to improve response times by up to 20 minutes. The 18-meter helipad uses existing elevators and an added vestibule equipped with high-speed automatic openers; the elevators can take patients from the roof to all critical-care areas of the hospital. The helipad received Transport Canada certification after meeting a comprehensive list of standards, and in December 2013 the Shock Trauma Air Rescue Society (STARS) held an inaugural landing. For the estimated 300 patients who will require STARS services in Regina this year, the helipad is a critical addition to a valued service.

PHOTO (Left): STARS flies more than 300 missions a year from its Regina base—it is expected that a significant number of those missions will touch down at Regina General Hospital.

PHOTO (Top): Specialized equipment was used to hoist materials onto the rooftop of the six-story structure.
PHOTO: The heliport gets patients to the care they need faster, eliminating the need for an ambulance ride from the Shock Trauma Air Rescue Society (STARS) base at Regina International Airport.

IDENTIFYING AN ALTERNATIVE SWING STAGE CONFIGURATION

Cable-suspended scaffolds, known as swing stages, are a necessity in high-elevation construction. Swing stages give workers access to areas of a jobsite that regular scaffolding cannot reach, such as the curtain wall on the vestibule at Regina General Hospital. Because the vestibule was located in a corner of the building and surrounded by other structures, it was not possible to meet the tieback technical specifications for a typical swing stage. Project teams throughout PCL have access to a dedicated, in-house team of construction engineering professionals who will work through such complex challenges. The engineering team identified an alternative configuration for the swing stage that would allow it to be used in this location, while still meeting all safety and regulatory requirements.

MANAGING EQUIPMENT PLACEMENT BESIDE AN ACTIVE HOSPITAL

Every project has unique equipment requirements, and the project team often determines delivery dates and duration of equipment use even before construction gets under way, so material will be on-site when it’s needed. Two such pieces of equipment were required because of the helipad’s location: a crane that had a boom length of 260 feet and was capable of hoisting the materials onto the rooftop of the six-story structure, and a concrete pump with enough length to reach the middle of the building. Both the crane and pump needed to be placed in a small laydown area at the front entrance of the hospital, which meant that pedestrian and vehicle traffic needed to be taken into consideration for the duration of their time onsite. In addition, no areas of the hospital were closed during construction, even during the removal of the roof, meaning there was minimal impact to patients as all the rooms could remain in use. The project team established barricades and alternative paths of travel along with extra way-finding signage to help guide patients through the temporary obstruction of the main entrance and parking facility. This allowed the hospital to function at full capacity and ensure that quality of care for patients was always a top priority.

“With major construction, like adding a rooftop heliport to an existing hospital, the potential to impact the day-to-day functions of the hospital is a huge concern, especially when the construction is immediately above the main entrance. PCL kept the project team well apprised of upcoming closures and completed their planned work within the timelines they provided.”

Barry Rorbeck – Executive Director Facilities Management, Regina Qu'Appelle Health Region
The PCL family of companies is a group of independent construction companies which carry out diverse operations in the civil infrastructure, heavy industrial, and buildings markets.