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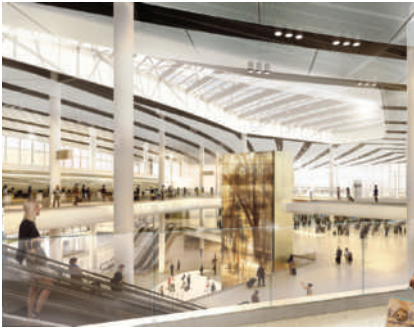


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Louis Armstrong New Orleans
International Airport

Move Over Mardi Gras, New Orleans Int'l is Opening a New Terminal

BY JODI RICHARDS



Not that New Orleans *needs* a reason to party, but the opening of the new terminal at Louis Armstrong New Orleans International (MSY) will surely merit some hearty celebrations. After nearly four years of construction and four delays of the opening date, the new 35-gate facility is scheduled to open this fall. But before the music plays and confetti flies, the airport has to make the move to its new home on the north side of the airfield.

A new 972,000-square-foot, three-concourse terminal is the star piece of MSY's \$1.029 billion capital program. A new apron and additional aircraft parking positions round out the investment, as well as enabling projects such as relocating the airfield lighting vault and FAA navigational aids, constructing a stormwater pump station and building a new airport roadway system.

Expressing it in decidedly local terms, the amount of concrete poured for the terminal project alone is equivalent to almost 174 million bowls of gumbo.

The need for a new terminal was multifaceted, explains Kevin Dolliole, director of aviation. With portions dating back to the 1950s, the current building is a "patchwork of improvements over time, with facilities and infrastructure from different eras all connected together." Evolving security requirements and operational needs have made it inefficient, and the aging infrastructure is costly to maintain and operate, he explains.



KEVIN DOLLIOLE

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“We have a lot of space in the facility, but much of it is in the wrong place,” notes Jordan Taylor, aviation principal at LEO A DALY, which participated in the programming, planning and site analysis. Concessions are heavily concentrated pre-security, holdrooms are undersized and three separate security checkpoints are inefficient for processing passengers and TSA staffing.



JORDAN TAYLOR

But that’s all changing.

LEO A DALY conducted an analysis of the options to meet MSY’s growing demand and the needs of the aging facility in 2011. At that time, the options included renovation in place, construction to the west of the current terminal, a new terminal built on the north side of the airfield, and what Taylor calls a “do nothing” approach.

Renovation was considered but proved to be less feasible due to the state and condition of the current facilities. In April 2013, the New Orleans Aviation Board

FACTS&FIGURES

Project: New Terminal & Other Capital Upgrades

Location: Louis Armstrong New Orleans Int’l Airport

Cost: \$1.029 billion

Groundbreaking: Jan. 2016

Grand Opening: Fall 2019

Project Manager: Burns & McDonnell

Structural Engineer: Walter P. Moore

Design Team: Pelli Clark Pelli, Manning Architects; Crescent City Aviation Team (joint venture of LEO A DALY & Atkins North America Inc.)

Architects of Record: Atkins North America; LEO A DALY; EStudio

Operational Readiness & Transition Services: Chrysalis Aviation Solutions

Contractor: Hunt-Gibbs-Boh-Metro Joint Venture

Passenger Boarding Bridges: JBT

Passenger Boarding Bridge Procurement & Installation: AERO Group

Aircraft Parking Layouts: AERO Group

Highlights: Consolidated security checkpoint; 40 post-security concessions; common-use technology; inline baggage screening; new parking facilities

announced that a new terminal on the north side was the best option. The selected parcel was a relatively clean greenfield site that could easily tie into the existing runway/taxiway system, explains Taylor.

While a new apron was necessary to connect the northside development to the existing pavement, one of the main advantages to the strategy is that MSY will have a brand new terminal without the added expense of constructing new runways and taxiways.

Moreover, a greenfield site means that the majority of construction occurs outside the secure area—a significant logistics benefit. “It was very nice to be able to fence off the construction site and have construction done non-AOA [airport operations area],” says Chris Spann, project manager at Burns & McDonnell.

That’s not to say the project was a breeze. Preparing the former swampland for construction involved considerable work. As part of a nine-month surcharge program, crews imported about 8 feet of sand to consolidate the soil and push out water before construction. To ensure further stability, the buildings are constructed on more than 5,000 100-foot piles. “Even the light poles are all on piles because the soil is so unique to this area,” notes Spann.



CHRIS SPANN

Welcome to N’awlins

The new terminal was designed by Pelli Clark Pelli, Manning Architects and the Crescent City Aviation Team (a joint venture of LEO A DALY and Atkins North America). The team’s primary objectives were operational functionality and creating an architecturally unique facility that reflects the region.

As soon as visitors arrive, the sights, sounds and smells of The Big Easy will greet them, says Dolliole. In the arrivals area, an atrium that connects all three levels of the terminal features a round bandstand surrounded with live greenery called the Jazz Garden. In true French Quarter fashion, local performers will provide live music to entertain travelers. “No matter where you are in the terminal, you will hear music,” he notes.

Beyond paying homage to the city’s iconic food and music, the new design went a step further by incorporating some of the city’s more subliminal features.

“A well-known cultural quirk about New Orleans is that it has its own directional compass,” explains Daniel Taylor, the Atkins senior architect who lead the design team after the conceptual design was complete.



DANIEL TAYLOR



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The new northside terminal is slated to open this fall.

"Traditional references such as north, south, east and west are replaced by lakeside, riverside, downtown and uptown. This is because the shape of the city resembles a curve (hence another New Orleans' nickname, The Crescent City), which makes traditional directions difficult to use. Streets bend and turn ever so gently that you can lose your sense of direction easily, creating a general geographic disorientation that locals have come to accept."

The design of MSY's central atrium subtly conveys this feeling by having several elements, such as skylights, that are purposely not in perfect symmetry. "This gives the sense of mystery and allure that visitors feel while walking the city's streets; but the overall interior design of the terminal with its volumetric simplicity makes wayfinding intuitive," notes Taylor. "The terminal's central atrium and the positioning of stairs and elevators allow passengers to naturally flow to the security checkpoint, concourses or baggage claim."

Another characteristic that terminal designers sought to emulate is the region's unique foggy aesthetic. In winter, sepia-like

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An image of oak trees being installed on the main elevator bank will convey the region's unique foggy aesthetic.

tones are created when sunlight hits morning fog as it rolls through thermal inversions, where cold air is trapped by a layer of warmer air. To recreate this quintessential Louisiana look, a massive glass-sealed image of oak trees captured by a local photographer graces the terminal's main elevator. "Printed on transparent sheets and layered on top of a silver backing, the image has a three-dimensional look that reflects light in a similar way the sun fills a foggy New Orleans morning," says Taylor.

Addressing Limitations

"There are a number of improvements built into the new facility we couldn't achieve here [in the existing terminal]," says Dolliole. For instance, physical constraints in the current facility do not allow the three separate security checkpoints to process passengers in an efficient manner or allow for expansion, which causes frequent backups. Additionally, once travelers clear the checkpoint, they cannot move to other airside concourses.

The new terminal features a consolidated security checkpoint designed to accommodate up to 17

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lanes of TSA equipment. Once screened, travelers will have access to the entire airside area, with a larger variety of concessions options.

"Our concessions program is not properly located in this facility," Dolliole says of the current terminal. Post-9/11 security requirements inspire passengers to spend more time airside. However, the old terminal does not have the physical capacity to adjust to that change. "This situation is remedied in the new facility, where the bulk of the concessions program is airside," he relates. The new lineup includes local favorites like Café Du Monde, Emeril, Fleurty Girl and MOPHO.

Where the old terminal is disjointed, dark and crowded, the new terminal is designed to be connected, light and airy. Passengers will pass through the consolidated security checkpoint and enter a sky-lit, voluminous hall with the choices of only left or right to simplify wayfinding.

On the concourses, plenty of seating and open viewpoints to the airfield encourage travelers to relax, notes Jordan Taylor of LEO A DALY.

Designing an aesthetically pleasing structure that can withstand Category 5 hurricane-strength winds was a special challenge. A substantial glass curtainwall, rated to withstand wind speeds up to 150 mph, brings in light and creates visual connections that make the terminal more inviting and friendly, Taylor explains.

Energy-efficient mechanical systems are expected to save the airport about 12% annually. The use of stratification ventilation, which only heats the bottom 10 to 12 feet of a large volume area, is a key example.

Radiant floors in the post-security area were installed below the large skylights and adjacent to the 55-foot glass curtainwall to address solar heat gain. When cooling is needed, tubes in the floor pump chilled water underneath to cool the floor and provide an efficient, higher level of interior climate comfort.

Improving Flow

The existing terminal is prone to congestion on the main curb because arriving and departing passengers compete for space. Traffic approaching the new terminal will use both sides of the building, a flow pattern designed to optimize traffic depending on the type of vehicle and its purpose. "We'll get more efficiencies in our on-airport roadway system by the four-way split of traffic approaching the facility," Dolliole explains.

Curbside check-in belts will further improve the flow of passengers and baggage, and a new inline screening system was added to make subsequent baggage handling more efficient as well. Common-use technology is built into the new facility for some airline partners.

Traditional signage inside the terminal and dynamic signage in the new parking facilities will make wayfinding easier for passengers, Dolliole notes.

A short-term garage with 2,190 spaces includes a walkway from the fourth floor to the ticketing/check-in area on the third level of the new terminal. Across from the arrivals area on the east

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side of the facility, a new long-term garage with 2,750 parking spaces is being constructed. A surface lot with 685 spaces is a short walk from the terminal, while the garage that currently provides long-term parking at the existing terminal will transition into a 2,438-space economy garage with shuttle service.

Airside, the new terminal has 35 gates: six in Concourse A, 14 in Concourse B and 15 in Concourse C. A double taxi lane between concourses B and C allows planes to move in and out without blocking the other concourses, which is a problem at the existing terminal. The airfield also will have nine full-size remain overnight positions.

Significant Growth

For the last three years, MSY has experienced record growth, with 13.1 million passengers in 2018, a 9.3% increase over 2017, which was also a record year of 12 million passengers, a 7% increase over 2016.

The new terminal is designed to better handle growing traffic, with flexibility to expand on the west end and, to a lesser extent, to the east. "It was the thought process early on that we couldn't construct something on that side of the airfield that would be constrained just to those gates," explains Dolliole. "We had to have a good ability to grow the facility."

That ability has already proved critical. "No sooner did we get a shovel in the ground and the airlines said 'We need more gates,'" Jordan Taylor reports. Because expansion was already figured into plans devised with Building Information Modeling, the design team was able to react to the change more efficiently. In addition, Border Protection Services changed its operating procedure to have passengers collect their baggage before processing through Immigration, which required a modification to the Federal Inspection Station layout.

The current layout allows for the addition of another six-gate concourse, and there is space in the footprint for the expansion of baggage claim.

BIM's Role

Building Information Modeling (BIM) was critical to the design of the project and provided numerous benefits, relates Andrew Graham, associate architect with LEO A DALY.



ANDREW GRAHAM

In particular, it facilitated the management of a large and complex team of partners. The terminal project alone involved 34 different digital models, each representing a different member of the consultant team combined with a different building system. "We are able to use the digital technology to work through the coordination of systems and help us as we get the different pieces of the building to fit together," Graham relates.

The first step was developing a project execution plan for how the team would produce the design through construction documents, then through delivery to the contractor and ultimately for use during construction. "This plan lays out how the entire design team will work in a digital

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environment and sets up a plan for 3-D modeling for the project,” he explains.

From the structural design to the framing of the roof, BIM was integral, allowing for a more efficient design and construction, adds Graham. Coordinating digitally continues through the fabrication and construction processes, as contractors and subcontractors reference the 3-D models to build out the terminal.

BIM also allowed the team to save time in the design and production of construction documents because changes automatically adjust and recalculate affected systems. In contrast, changes in a CAD-based system or 2-D documents would have likely meant starting over completely. “That helped a lot with the structural design, led by Walter P. Moore, in optimizing this building and project,” says Graham.

“We really relied on these digital systems to help with how we carried out the design and how we made sure everything was working,” he adds.

BIM also allowed for flow analysis to ensure efficiencies as travelers move throughout the building, as well as wind speed analysis and testing of the structural system to make sure the new terminal can withstand a Category 5 hurricane. Using computational fluid dynamic modeling, fire protection engineers were able to determine that smoke control and fire protection systems worked appropriately and were optimized for the facility.

Everybody Ready?

With construction nearing completion, one major task still looms large: planning and completing the move from the existing terminal to the new. To make the process go as smoothly as possible, MSY hired Chrysalis Global Aviation for operational readiness and transition (ORAT) services.

“There are 18 to 24 months of planning going into that overnight move,” Dolliole advises.

Chrysalis Managing Partner Suzanne Phelps and her team are taking a full inventory of the airport to prepare. “They work through the process and coordinate every aspect of the move,” says Dolliole.



SUZANNE PHELPS

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