CASE STUDY

First-Class Arrival: New Delta Air Lines Terminal C

LaGuardia Airport (LGA) has undertaken an $8 billion transformation and redevelopment. The project includes a new $4 billion Delta Air Lines terminal, a world-class facility spanning 1.3 million square feet. As the airport's largest airline, Delta embraced the development contingent upon minimization of project impacts to customers, employees and the community. The stipulation presented planning and construction challenges as well as opportunities for efficiency and innovation.

Challenge

Delta Air Lines operated out of two separate terminals at LaGuardia Airport — Terminals C and D — in an environment where modernization would need to occur without disrupting day-to-day operations. Construction would occur alongside the redevelopment of Terminal B, requiring disciplined coordination across multiple large-scale projects within an active airport environment. Designing and delivering a new terminal without disrupting ongoing

Project Stats

Client
Delta Air Lines

Location
LaGuardia Airport Flushing, New York

$4B
project cost

1.3M
square feet

1
new terminal

37
new aircraft gates

4
concourses

LEED
gold certified

airline operations, passenger movement or airfield operations presented a significant challenge. Additionally, the site of the Delta Terminal C project would span multiple flood zones and the existing footprint could not expand due to Flushing Bay to the north and east, and the Grand Central Parkway to the south.

Flood exposure would complicate development, requiring the project team to integrate flood protection, climate resiliency and infrastructure hardening measures into the design. Protecting personnel, electrical and mechanical equipment, and critical systems from flooding while maintaining operational continuity would be essential.

At the same time, Delta and the Port Authority of New York and New Jersey established ambitious goals for passenger experience, operational efficiency, sustainability and resiliency. The facility would also need to meet stringent Federal Aviation Administration (FAA) and Port Authority security requirements.

Solution

The project approach would consolidate Delta's operations by replacing the existing Terminals C and D with a single, modern terminal complex designed to improve operational efficiency, passenger experience and long-term flexibility. Given the scale and complexity of the Delta Terminal C project, addressing challenges would require a coordinated, multilayered approach that would include planning, design and construction execution.

Plan Early and Communicate Often

Our team would work with Delta's internal interested parties, the Port Authority, the Transportation Security Administration (TSA), concession vendors and other vested parties to define programming needs, adjacencies and critical functions. Early collaboration would establish a shared understanding of priorities, constraints and phasing requirements, which would prove essential given the concurrent redevelopment of Terminal B.

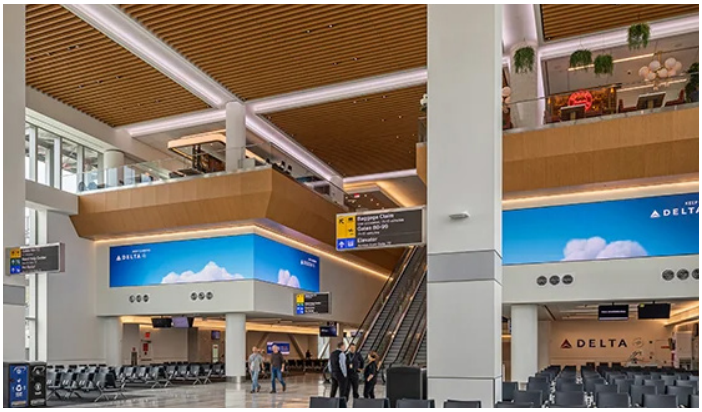
Construction planning, material procurement, as well as design and construction phasing and scheduling would be coordinated with interested parties to avoid delays. Budgets would be established and approved early, breaking funding down by project, funding source and division and managing it throughout the project life cycle. Before beginning work, change management procedures for potential cost, schedule and change order events would be defined to streamline approvals.

Construction began in 2017 during record LGA operations. While the COVID-19 pandemic created an unexpected lull in travel, the team was prepared to safely accelerate the project during this period because of upfront planning and regular collaboration.

Develop Processes to Avoid Disruption

To minimize passenger traffic disruptions, the team would develop several solutions at the outset. An innovative roadway and airside phasing approach would maintain continuous operations and airline traffic movement. The team's plan would call for a temporary structure to connect roadways for two departure levels, freeing up valuable construction space and alleviating traffic congestion throughout the construction areas.

New roadway foundations and the headhouse would require 4,000 piles. As pile completion would be critical to the schedule, the team developed real-time tracking for progress data and status.



An inspection methodology would be utilized to log daily reports, progress, inspections and corrections. This real-time data and progress tracking would be shared with the team to plan subsequent tasks and stay on schedule.

The project would require hardstands where aircraft could be regularly relocated during construction. Detailed phasing, grading, paving and access plans would be developed to avoid operational interruptions. The hardstand requirements would be met through the established communication and collaboration practices among team members and interested parties.

Elevate Operations on Flood Plains

Two flood plains would constrain the Delta Terminal C project site. As a result, the team would construct the new terminal vertically to optimize airfield functionality and maximize limited space. Designing the departures level to be elevated would allow the terminal to be built in two flood zones. The elevation protects critical equipment while allowing floodwaters to flow under the building.

All major electrical and mechanical equipment for the new terminal would be located on the upper levels. In addition, a 12-megawatt substation would be located within the first concourse to mitigate site constraint issues and provide additional electric capacity to the airport. This 21,000-square-foot substation would be integrated alongside other critical equipment and designed to connect to future terminal components.

At ground level, the use of flood barriers of flexible roll-up membranes and deployable plank systems would be used to seal the building and baggage claim hall. These portable plank systems were stored on-site and could be installed before an expected flood event.

Results

With upfront planning and regular communication among project team members and interested parties, the Delta Terminal C project was designed and constructed within a constrained site footprint, and phased to maintain Delta Air Lines and LGA operations.

However, the project achieved more. The project delivered a new terminal complex that improved passenger processing, airfield efficiency and long-term operational flexibility.

The new Terminal C features 37 aircraft gates connected by a centralized terminal headhouse for streamlined efficiency. The headhouse includes a check-in lobby, security checkpoint, baggage claim, administrative offices and conferencing space. Airfield efficiency improved with dual taxi lanes added between concourses to minimize time between the gate and takeoff or landing.

Passenger experience and accessibility were also central to the terminal's design. Improvements included enhanced curbside operations and direct garage access, a multisensory room for passengers on the autism spectrum, hearing loop systems at gates, and a new Delta Sky Club with expanded food and beverage offerings.

The project exceeded its original sustainability requirements, achieving LEED Gold certification. Energy performance surpassed baseline requirements by more than 6%, supported by efficient lighting, envelope design, mechanical systems and an ice storage system that shifts cooling demand to off-peak hours. Water use was reduced by more than 45% through highly efficient plumbing fixtures. Overall, the terminal was designed and executed to maximize operational efficiency and sustainability through a range of integrated strategies, including:

- Energy-efficient HVAC, plumbing and lighting systems, supported by an ice storage system that uses off-peak power to produce approximately 110,000 gallons of ice for summer cooling demand.
- Daylight-responsive controls, including sensors that adjust electric lighting levels and automated window tinting based on sunlight, weather and time of day.
- Stormwater management systems designed to capture and treat approximately 90% of average annual rainfall and remove 80% of post-development suspended solids.

- Landscape and water efficiency measures, including elimination of permanent irrigation and reduced interior water use through high-efficiency fixtures.
- Construction waste diversion and material sourcing, achieving 90% diversion from landfills, use of recycled and regional materials, and incorporation of FSC-certified wood.
- Infrastructure to support electrified ground operations, including charging for electric ground support equipment.

The terminal opened in 2022. In 2024, LaGuardia Airport received the Airport Service Quality Award for best North American airport serving 25 to 40 million passengers, based on passenger satisfaction surveys conducted by Airports Council International. LaGuardia also earned recognition from Forbes Travel Guide as the best airport in the United States. Through disciplined planning, phased execution and sustained coordination, the team maintained airport operations while delivering a resilient, high-performance terminal on a tightly constrained, flood-exposed site.

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