

2022 NAC'S Recognition of Special Achievement Award: La Guardia Terminal B Project

The first winner of the National Academy of Construction (NAC) recognition of special achievement was awarded at the NAC annual meeting in November 2022. The winning project, “Transforming New York City’s La Guardia Airport’s Terminal B into a World Class Facility”, exemplified NAC’s commitment to demonstrate the great work and achievements of the architectural, engineering and construction industries and their positive effects on the built environment and society. This project will create a blueprint and set “high bar” for future nominees for the award.

The construction of the \$4 billion, 1.3 million square foot, La Guardia Terminal B was the first phase of a transformation of New York City’s La Guardia Airport. Once described as a “third world airport”, La Guardia is now one of the most modern airports in the world.

Under the leadership of the Port Authority of New York and New Jersey and the New York State Governor’s office, this enormous achievement brought together dozens of partners, consultants and stakeholders to bring to fruition this complicated project while maintaining existing operations at the airport and continuing construction during the Covid pandemic. This project will create positive lessons and examples for future large infrastructure projects.

Originality and Innovation

Transforming La Guardia’s Terminal B included a new eight mile roadway network, a four level arrivals and departures hall and two concourses housing 35 new gates. Each of the Concourses is connected to the main terminal by skybridges, which are also an important part of the complex project construction staging. The staged skybridge construction allowed maintaining operations in the existing terminal while the new terminal was built and opened in phases. This is also the first airport in the world to feature dual skybridges over active airfield operations.

La Guardia Airport is constrained on all sides by a bay and the Grand Central Parkway in Queens New York. The new terminal was built to allow an additional 40 acres of airside apron and generated improvements to the existing taxiway system.

A 13,500-foot-long conveyor, housed in the arrivals and departures hall, transports checked baggage through a new baggage handling and screening system. The first-of-its-kind “Natural Feature Navigation” system uses artificial intelligence to guide mobile Inspection tables safely through the baggage screening facility. This new system can adapt to the next generation of air travel.



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Resourcefulness in Planning and Solving Design Challenges

The project used a carefully designed series of complex phasing strategies to minimize impacts on daily airport operations including the use of temporary pedestrian connectors and modular roadway bridges. The construction was sequenced and coordinated with the Airport stakeholders.

One of the most complex aspects of the project was building a new roadway system, in a constrained airport, while maintaining the existing roadway operation. An innovative construction strategy employed the 'Mabey' bridge. This modular, temporary roadway taking up two lane widths, provided passengers with access to the terminal while allowing the permanent construction of the two remaining lanes. The new roadways were built using an elaborate system of horizontal rails and hydraulic jacks to install 60 ton girders followed by a carefully sequenced bridge deck construction. Once passengers transitioned to the new roadway, the Mabey bridge was removed allowing the rest of the road to be constructed.

The previously mentioned Skybridges, adjoining the new Terminal building to the Eastern and Western Concourses, are also an example of meeting design challenges. Built at different stages of construction, the Eastern Skybridge was 'stick-built' at night while the airport was closed for flights, since it is located

directly above active arrivals and departures roadways. In the meantime, a temporary passageway connected passengers to the new gates through the old terminal building. The Western Skybridge however was constructed at a later time, after the new arrivals and departures hall was operational.

When the design of the terminal was underway in 2015, there was no way to foresee the operational impact that for-hire vehicles (FHVs) would have on the airport's roadways and parking infrastructure. The newly opened Terminal B Parking Garage was quickly modified to create a staging area for FHVs, thereby greatly reducing frontage roadway congestion.

Always adapting to the impact of changing vehicular volumes, the project has undergone over 500 geometric and operational changes to support the program – that's one change every 3.8 days.

Sustainability Considerations

The new Terminal B has been awarded Leadership in Energy and Environmental Design (LEED) v4 Gold certification by U.S. Green Building Council making it the first airline terminal in the world to achieve this designation for its sustainability efforts under the current, more stringent, requirements. Nearly 100 percent of the concrete debris from the original Terminal B parking garage was recycled and used for new construction, eliminating the equivalent of 250,000 miles of truck traffic on local streets and highways.

Additionally, the new terminal is designed with water-saving plumbing fixtures and energy-saving LED lighting, allowing for a water savings of more than 43 percent as well as an 18-percent reduction in energy costs.

The project was also the first to be awarded Envision Platinum for its industry-leading approach to sustainability and resilience. This is the highest level of recognition within The Institute for Sustainable Infrastructure's awards program.

