

CASE STUDY

Delivering Expanded Cargo Capacity for O'Hare International Airport

With phases I and II of the Northeast Cargo Development complete, the Chicago Department of Aviation and AeroTerm began planning the project's next piece. Our team was retained to design the airfield and landside infrastructure for phase III, optimizing the remaining space to provide a 20% increase in air cargo capacity of the development.



Challenge

Cargo capabilities are among the major metrics used to determine an airport's economic productivity. Recognizing a need to advance its capabilities and increase capacity in this area, Chicago Department of Aviation began working with AeroTerm — an airport cargo facility developer — in 2008 to repurpose an existing space on the northeastern portion of airport property.

The first two phases of the three-phase build-out and development included 785,000 square feet of cargo warehouse and office space, plus airside improvements consisting of over 110,000 square yards of apron pavement.

Project Stats

Clients

AeroTerm and Chicago Department of Aviation

Location

Chicago, Illinois

900K

SQUARE FEET OF
WAREHOUSE SPACE

DESIGNED FOR LEED

SILVER

CERTIFICATION FOR
CARGO DEVELOPMENT

13

PARKING POSITIONS
FOR 747-8 AIRCRAFT



These phases provided 11 parking positions for 747-8 aircraft, ramp services including ground power and hydrant fueling systems, and 2,200 feet of ADG VI (TDG 5) taxilane. Additionally, landside improvements consisted of a new cargo access road, relocation of an existing roadway, extension of utility services, more than 180 truck dock positions, a truck circulation area and approximately 700 employee parking spaces.

The delivery method used for this development was construction manager at-risk, a model with which we have had an extensive, successful history at O'Hare. Phase II construction work was completed in December 2016, and design for phase III began in 2018.

Solution

Our team — the retained designer of record for the supporting infrastructure of the facilities developed in phases I and II — was selected to provide the same services for phase III. This included aircraft parking areas, taxilanes, roadways, stormwater systems and other infrastructure outside the warehouse facility.

Since this was the final phase of the cargo expansion, design work incorporated the last remaining square footage on the development lease, challenging the project team to optimize the space to accommodate the required infrastructure. Phase III added two more parking positions for 747-8 aircraft with hydrant fueling, an 1,100-foot long taxilane extension, an 800-foot-long extension of the landside access road, and 135,000 square feet of warehouse and office building space —

bringing the total development to 900,000 square feet, with over 200 truck docks and 850 employee parking spaces.

Utility relocations: Further complicating the challenge of optimizing the available space was the fact that an existing utility corridor passed through the area where phase III would be developed. This meant the design would have to work around existing utilities where possible and relocate those that could not be avoided through a complex phasing program during construction. We designed new and/or relocated water supply, sanitary and storm sewers, natural gas, and duct bank infrastructure for electric power, airport security and building management systems.

Site remediation: Because the cargo development was built on a brownfield site — a decommissioned Air National Guard base — significant environmental impact mitigation was required for each phase of construction. Redevelopment of the site involved extensive abatement and demolition of existing utilities, buried foundations and tunnels, underground tanks, contaminated soil (nonhazardous special waste), asbestos-containing material, and other environmental liabilities.

PFAS disposal: Disposing of all excess soil off-site — due to the lack of on-airport stockpile capacity — was a unique challenge in phase III. Off-site disposal required compliance with the Chicago Department of Aviation's policy on the emerging contaminant, per- and polyfluoroalkyl substances (PFAS). We performed soil investigations and characterization to determine the presence of PFAS and to document the

concentrations through laboratory sampling. This would inform bidders of disposal requirements and facilitate reimbursement through the ground lease agreement between the Chicago Department of Aviation and AeroTerm.

Results

Through a variety of efficient design standards, the completed facility is targeting LEED Silver certification. This is being achieved through the use of permeable concrete pavement, recycled crushed concrete and asphalt millings from demolished pavements, and warm-mix asphalt; installation of electric vehicle charging infrastructure; and redevelopment of a former military facility.

The permeable pavement served dual functions by achieving credit toward LEED and SAM certification, as well as complying with city permit requirements. By preplanning the entire campus ahead of performing detailed design, we recognized an opportunity to build additional capacity into the phase I permeable pavement storage layer that would accommodate the permitting and sustainability requirements

for phase III. This resulted in schedule and cost savings for the owner through reduced permitting time and the economies of scale achieved by building a larger quantity of storage layer at one time, rather than breaking it up by phase.

Phase III completes the Northeast Cargo Development, offering a significant boost to the cargo capacity at O'Hare. The facility is the only one on airport property that was designed to accommodate ADG VI cargo aircraft, providing a new revenue-generating space that is primed for growth.

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