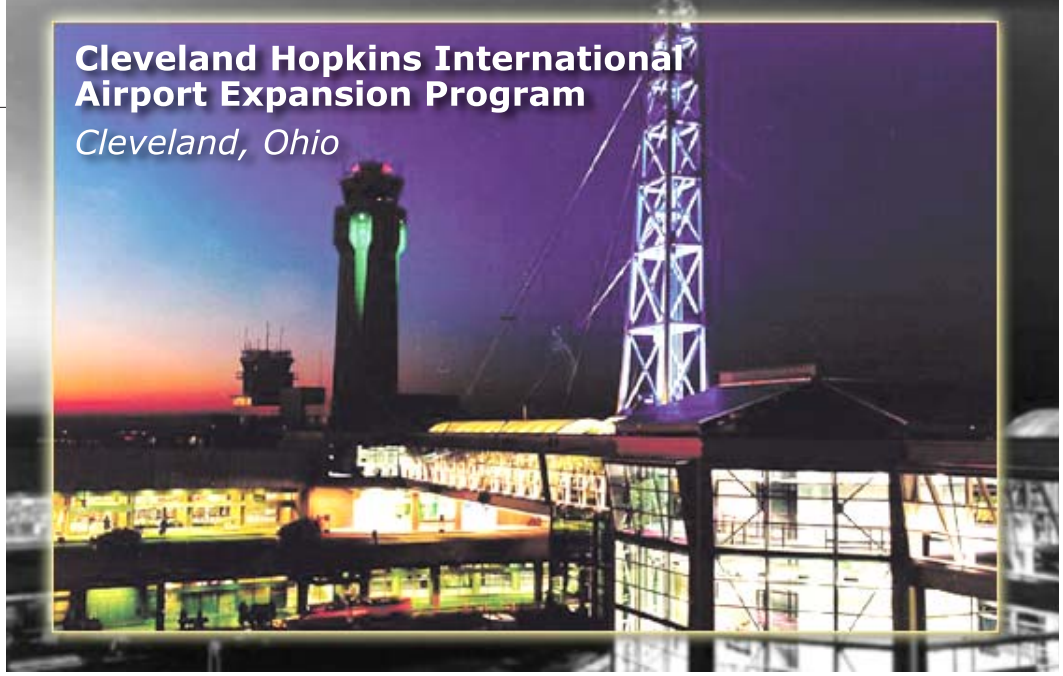
Cleveland Hopkins International Airport Expansion Program

Cleveland, Ohio



Client:
Department of Port Control, City of Cleveland, Ohio

Program Cost:
$1.4 billion

Project Duration:
March 1998—December 2004

Parsons Services:
Program management, design management, airport planning, environmental planning, safety, quality assurance, project controls, contract administration

Cleveland Hopkins International Airport is surrounded—by the Rocky River Reservation Park and gorge to the south and west, Highway I-480 and State Route 17 to the north, NASA Glen Research Center to the west, and State Route 237 and Ford Motor Engine and Assembly Plant to the east—and therefore cannot expand its territory. In 1997, Cleveland Airport identified several projects to support increased capacity in the 21st century. The airport needed a new parallel runway sufficiently separated from other runways to facilitate electronically aided simultaneous takeoff and landing operations.

The entire EIS planning process for the new runway was completed within 29 months, far shorter than the more typical 10 years, using the FAA's Expedited Airport System Enhancement (EASE) initiative.

Parsons entered into a joint venture partnership called the Program Management Team (PMT) to assist in managing the design and construction of over 20 projects required to overcome the many obstacles facing the construction of New Runway 6L-24R in an existin area. During its first 29 months, the project focused on airport planning, environmental studies and permits, fundraising, and detailed cost and schedule analysis. Many property issues had to be resolved to make the new runway and its surrounding safety zones work with neighboring land uses. In fact, it required an act of Congress to acquire the additional property needed for easements from NASA, local business owners, local homeowners, the City of Brookpark, and Cleveland Metroparks.

Extremely sensitive environmental issues arose because most of the operating airport property discharges into several nearby streams or into the Rocky River. With help from northeast Ohio's Congressional delegation and Ohio Governor Robert Taft's office, the Department of Port Control (DPC) and PMT secured a waiver of the Clean Water Act water quality certification from the Ohio EPA and obtained U.S. Army Corps of Engineers, authorization to construct the new runway while observing extremely rigorous and precedent-setting environmental controls. In exchange, the city agreed to preserve or restore 30,000 feet of streams and over 300 acres of wetlands in and around Cleveland.

A total of 3.8 million cubic yards of earth will be moved during the Abram Creek relocation project.

DPC and PMT integrated complex financial packaging with funding sources from federal, state, local, and user communities involving a federally-backed $149-million letter of intent, the largest issued at the time, general aviation revenue bonds, passenger facility charges, airline-supported rates and charges, Transportation Review Advisory Council funds, and several other sources. Although the City of Cleveland controlled all funding throughout the program, no city tax dollars were used on the new runway or its related projects.

In May of 2001, final designs for several projects were completed and construction began. The runway was constructed in two stages to meet urgent airline capacity requirements. Stage I, the 7,000-foot northern section, required purchasing businesses north of State Route 17 as well as relocating a major restaurant and the four-lane SR 17 and associated utilities to make room for the new runway's additional safety area. This stage consisted of:

- *7,000 feet of new 150-foot-wide concrete pavement*
- *450,000 feet of electrical cable*
- *1,500 lights*
- *A new electrical vault and 138-kV substation*
- *Redistribution of the primary power supply from steel towers to separate concrete-encased underground duct banks*
- *Renovation of the traffic control building (TRACON) to house new FAA computerized control systems and NAVAIDs equipment*

This project included moving a 677,000-cubic-yard soil stockpile and relocating all utilities to the western side of the airfield. For comparison, this 40-inch-thick runway section used enough materials in its construction to pave a two-lane road 4 inches deep from Cleveland to Columbus, 145 miles away.

Runway ready for preflight checkout on November 11, 2002, one month ahead of opening day

First concrete placement for outlet drop structure.

Completed structure in operation during a rain storm.

The new runway's second stage proved even more complex because three huge projects had to be completed before construction could start. First, Abram Creek, a major feeder to the Rocky River, had cut an 80-foot-deep gorge across the entire airfield and through the runway's path. PMT had to relocate the creek through four parallel 120-inch-diameter concrete reinforced pipes under the airfield, thus allowing the ravine to be filled and runway construction to proceed.

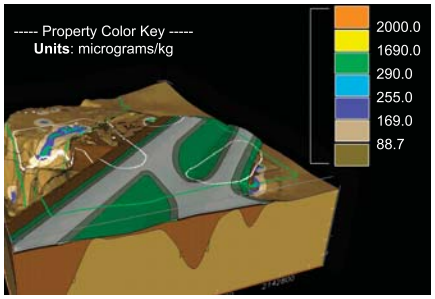
Three massive concrete structures were also required. The first, an inlet structure, routes the creek's water uniformly into the four parallel pipes. The second, at the center point of the 3,800-foot run, is the first hydraulic drop structure, where the water drops 18 feet and enters the second section of the culvert system. The third structure is the outlet drop, where water leaves the culvert system, drops another 18 feet, and re-enters the original creek bed. The entire drop structure runs under 40 feet of structural fill material used to bring the airfield up to the finished subgrade for the new runway. The fill required to occomplish this massive task come from two onsite sources: an existing 1.5-million cubic yards of soil stockpiled from previous projects and excavation of a new 2.5-million cubic yard detention basin between the runways at the south end of the airfield.

The problem of Abram Creek solved, the PMT turned to the second project. NASA Glen Research Center had several active and mothballed facilities directly in the proposed path for new runway's. In addition, several facilities were in the blast zone of one of the critical relocated facilities and required relocation to another area of the NASA complex. One such facility was the Rocket Engine Test Facility (RETF), which was built in the 1950s and had been mothballed. The RETF had the added complication of being listed on the National Register of Historic Places. Parts from this facility were carefully salvaged for display in various museums, including the Smithsonian. In addition, a new video and model were created to preserve the facility for historic record. The NASA Projects, totaling $107 million in design and construction, were necessary to obtain property transfer for airport runway use.

The third major operation required to complete the new runway involved reconfiguring and closing three solid waste landfills, again on the NASA property. These landfills were created during rocket testing in the 1950s. Parsons' environmental experts conducted extensive sampling on NASA property in the summer of 2002. The landfill design is complete, and the permit process is underway. These same environmental experts are planning, obtaining and maintaining permit documentation, and supervising the landfill projects.

The new runway's second stage is under construction. While electrical work continues through the winter, paving is suspended until this April. Both pavement and electrical work will be completed by July 15, 2004, so that the runway threshold can be relocated to its final position and the runway can be opened in its final 9,000-foot configuration on August 5.

The new runway is classified Category III (CAT III), which allows pilots to use it in very low visibility. The FAA is installing the navigational instrumentation, which is to be commissioned at the north end by September 30 and on the sough end by November 25. At that point, the new runway will be fully commissioned as a CAT III runway. Additional instrumentation is also being installed that will allow simultaneous offset instrument approach (SOIA) landing and ground control, thus completing the full capacity increase needed by operations. SOIA instrumentation uses a state-of-the-art radar precision runway monitoring system, of which fewer than



Final landfill configuration with new runway and parallel taxiway.

12 are currently in use in the country. In addition, a surface movement guidance control system is being installed to enable surface traffic to navigate to and from the terminal in low visibility. Finally, a state-of-the-art computerized control and monitoring system will upgrade existing and new runway lighting control. All of this work is scheduled to be completed and in operation by February of 2005.

One of the new runway's primary design goals was to eliminate aircraft crossing incursions with the existing crosswind Runway 10-28. The 9,000-foot new runway completely eliminates any crossing of runway pavements, thus improving operational safety at the airport.

The parallel Runway 6R-24L still crosses the crosswind runway. One of the new projects in the approved future airport layout plan is a design to extend the existing parallel runway to the south, thus eliminating the only remaining pavement incursion. Parsons and the other PMT members are working hard to extend the contract to include the design and construction management of this new project, which should be completed by 2006.