

## Team leads design effort for runway expansion

Construction has begun on a major infrastructure project to expand capacity at Washington Dulles International Airport, which will aid in improving congestion in regional and national airspace.

The Fourth Runway Project is one of the key elements of the Metropolitan Washington Airports Authority's efforts to accommodate increased travel demand.

In the summer of 2000, the authority, which manages both Washington D.C. airports, announced a \$3.4 billion capital construction program to bring Dulles closer to its full potential. The Fourth Runway Project, which is a part of this overall program, was initiated by the authority to meet increasing demands in a safe and environmentally acceptable manner.

"We're pleased to be part of a collaborative effort that promotes aviation, safety, efficiency and environmental responsibility for Virginians and all visitors to this great state," said project manager David Stader.

Two runway sites were identified for the fourth and fifth runways. To meet an aggressive schedule and better identify potential issues associated with construction, the authority selected a consultant team, including CH2M HILL, to begin conceptual engineering work in a parallel effort to the ongoing environmental impact statement.

The project team completed conceptual design of the fourth and fifth runways and the final design of the fourth runway alternative, Runway 1L-19R. CH2M HILL provided the following services for the new runway complex:

- technical design management
- airfield traffic and geometric analyses
- airspace analyses (including air-traffic-control-tower line of sight)
- grading/stormwater analysis and design
- environmental support
- airfield electrical design
- pavement design support
- navigational aid system analysis and design

The team performed upfront planning analyses identifying potential obstructions to air navigation. CH2M HILL simulated alternative airfield operations to maximize the design of the new airfield facilities. The line of sight from the new air-traffic-control-tower location was then verified, which was paramount as both runway locations are in areas that are currently heavily wooded.

The team has completed the preliminary engineering and final design phases for the estimated \$225 million runway complex,



This rendering depicts the completed Fourth Runway Project (artwork by Tom Hamilton)



Earthmoving equipment cleared nearly 600 acres to make way for the runway project. (photo by Timothy Wagner)



A bird's eye view of ongoing construction (photo by Tim Wagner)

and construction has begun. The complex was engineered and packaged under three major construction contracts, including: rough grading and storm-water drainage; paving, electrical and navigational aid construction; and a pavement transition package at the interface with the existing airfield complex (and to support the necessary construction phasing of the project).

The project required coordination with a large design team, the authority and stakeholders such as Virginia Department of Environmental Quality, U.S. Army Corps of Engineers, Fairfax and Loudoun counties, and the Federal Aviation Administration. In two years, the new runway is scheduled to open and the capacity of the national aviation system will be immediately improved by this important addition to the nation's infrastructure.

"The CH2M HILL component of the design team performed extremely well, especially regarding coordination within the design team as well as thinking outside of the box," said Gary K. Fuselier, design project manager for the Metropolitan Washington Airports Authority. "The successes achieved by the project thus far could not have happened without the performance of the CH2M HILL team." 

### Project takeoff

**The team:** Project manager David Stader and employees from: Denver, Colorado; Charlotte, North Carolina; Herndon, Virginia; Milwaukee, Wisconsin; Pittsburgh, Pennsylvania; and Richmond, Virginia

**Statistics:** 600 acres of clearing • 2.5 million cubic yards of earthwork • 600,000 square yards or 560,000 tons of concrete

**Approximate construction value:** \$225 million

**Most commonly asked question, and the answer**

**Q:** How thick is that pavement anyway?

**A:** The concrete pavement is 17 inches thick