# Memphis International Airport, FedEx Airbus A380 Hangar Facility

## Memphis, Tennessee

***Owner***
FedEx Corporation

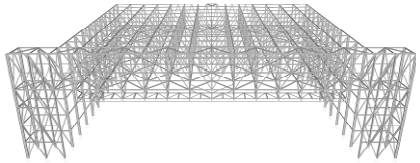
***Client / Architect***
Ghafari Associates, LLC

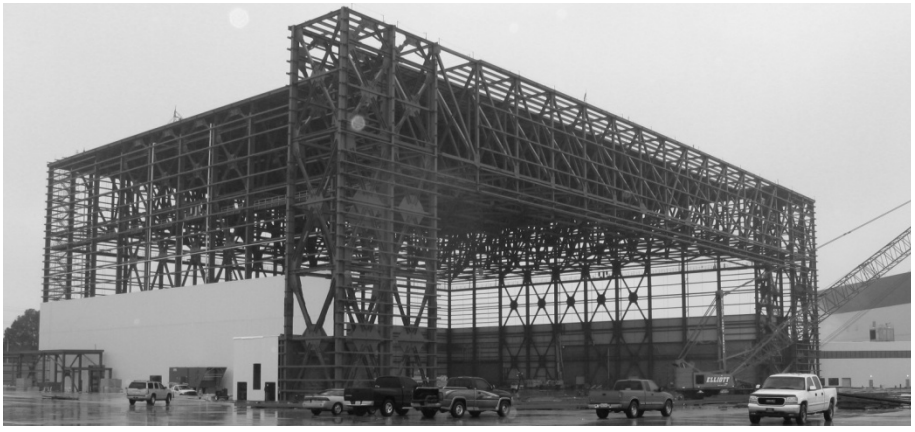
***Contractor***
Hunt Construction

***Completion Date***
2009

***Construction Cost***
Confidential

***Total Area***
300,000 sf





FedEx Corporation handles more than four million tons of cargo each year through Memphis International Airport. Thornton Tomasetti provided structural engineering services for a new mega hangar and multiple support buildings to accommodate the growing volume.

The FedEx Hangar Facility is the first of its kind in North America, and is designed as a base maintenance center for the world's largest commercial aircraft. The project consists of several components including a parts warehouse; new shop space and offices; a security building; a ground service equipment maintenance building; and an aircraft maintenance hangar.

The 152,000-square-foot hangar is the most prominent structure within the facility. With a 400-foot-long main span, a 330-foot building depth, and an overall height of 150 feet with 100-foot clear-height, the hangar supports simultaneous maintenance for multiple wide-body and narrow-body aircraft.

A one-way roof-framing system was utilized to minimize primary truss member connection demands and simplify the fabrication and erection process of the structural steel. The main roof steel framing is designed to support numerous suspended overhead crane hoists and telescopic platforms, which are hung directly from the 400-foot-span roof trusses.

The project site is close to the New Madrid Fault zone, which required the structures to be designed and detailed to accommodate all requirements for Seismic Design Category D in accordance with the International Building Code, 2003 Edition. The project demanded structural continuity and ductility at the interface of the special concentrically braced frames and the deep foundation system. This was critical to ensure a robust overall structural system because of poor soil conditions that exist in the Memphis region. Concrete special moment frame foundations were utilized to ensure a ductile response to meet code prescribed seismic loading demands.

Thornton Tomasetti