



# UNITED AIRLINES NEW WIDE BODY HANGAR & TAXILANE Z1 IMPROVEMENTS

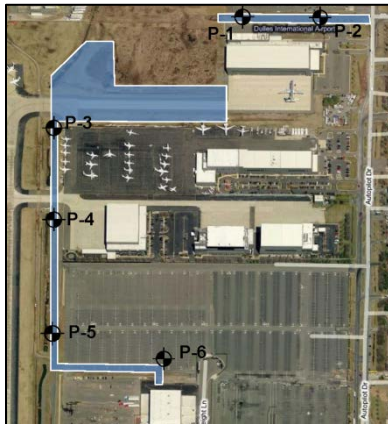
- Dulles International Airport

## PROJECT DESCRIPTION...



Comprised of a 90,000 SF hangar, aprons, and Taxilane Z1, the hangar will house the full fleet of United Airlines aircraft, including the Boeing 767-300 and Airbus A350-1000. With column loads up to 650 kips, and maximum uplift loads up to 550 kips, including interior slab-on-grade and surrounding P-501 pavements, project details are designed to support the new larger aircraft. The slab and surrounding aircraft P-501 pavements will tie into the existing P-501 Taxilane Z1.

The project also included widening of Taxilane Z1 and approach apron to access the UAL hangar. Utilities, including 3,000 LF of electric duct bank, 700 LF of natural gas, new driveways, parking lots, a 50-foot diameter fire suppression system and a Storm Water Management Facility were incorporated into these improvements and were included with the design.



## SCOPE OF WORK...

Balter performed three geotechnical evaluations to provide design recommendations for the hangar, new pavements, and utilities. Detailed work plans and height restriction forms were coordinated with MWAA/FAA due to close proximity to the runway and on the active Taxilane Z1. Borings were drilled to evaluate subsurface soil and rock conditions. Geo-environmental engineers prepared Health and Safety Plans (HASP) and screened all samples for contaminants. Collected soils and rock samples were tested in our AASHTO-accredited laboratory to determine physical and corrosive characteristics and engineering properties.



Our primary focus was to select a foundation system suitable to limit uplift loads, but also cost effective as shallow rock conditions would result in costly excavations. Based on the collected data, conventional shallow foundations would have been acceptable; however, the combination of uplift loads and the shallow rock warranted a more feasible approach. Deep foundations, caisson and micropiles, were assessed, but not as cost effective as our recommended approach of standard shallow foundations fixed to the underlying rock with anchored rock bolts. Our detailed geotechnical report provided specific recommendations addressing the suggested foundation system and alternate deep foundation options. Detailed geotechnical recommendations for aircraft P-501 pavement design were provided, including design CBR value, a modulus of subgrade reaction, as well as earthwork recommendations and seismic design.

## ADDED VALUE...

Balter assisted in reviews and modifications of the project specifications related to geotechnical issues and actively participated in constructability issues, value engineering alternate reviews, and review and comments to contractor's proposed methods.



**THE ROBERT B. BALTER COMPANY.**

*Geotechnical Engineering, Subsurface Exploration  
Construction Inspection and Materials Testing*