



# AEROTURN PRO AIDS PASSENGER BOARDING BRIDGE LAYOUT



**C**lient success is what we're all about at Transoft Solutions. The best support we receive comes from users who tell us how they've applied our solutions to their work. Now learn how our airside design software, AeroTURN Pro, helped Keith Foglia, project manager from Urban Engineers, Inc with his latest airport project.

**"AeroTURN Pro (is) a reliable and cost effective method for evaluating existing facilities and assisting in the design of new facilities."**

*Keith Foglia,  
Urban Engineers*

Aircraft parking layouts must optimize the available space at the gates and provide convenient access for aircraft. The competing needs for ground service vehicle parking, fire fighting equipment access, and passenger access via passenger boarding bridges (PBBs) make ramp planning a challenging design exercise.

**PROJECT OVERVIEW.** Washington Dulles International Airport is performing significant airfield construction to expand existing terminals, construct an underground automated people mover system and expand airfield capacity of the airfield. As part of the construction, the Metropolitan Washington Airport Authority is updating the midfield area and replacing Concourse C-D with a new 41-gate domestic international terminal building that will be called Tier 2. Narrow body aircraft required one PBB and wide body aircraft required two PBBs. Four of the gates are designed to handle the Airbus A380 and used three PBBs.

Urban Engineers, Inc. (Urban) is performing planning and civil engineering for the Tier 2 project as a subconsultant to Kohn Pedersen Fox Associates.

**LAYOUT AND ACCESS.** This terminal will accommodate a final aircraft parking configuration and a series of temporary parking layouts that facilitate phased construction. To minimize the need for temporary bridges or additional bridges that would have to be relocated or removed, the design required the layout of the PBBs to work in all phases of construction. Each aircraft parking location in the permanent and interim construction phases had to be studied so that a manufacturer and model of PBB could be selected and a rotunda location determined that suits the capabilities of the selected PBB and hold room locations in the terminal. Burns & McDonnell Engineering provided a preliminary layout as the basis of the design. Urban then used Transoft Solution's software, AeroTURN Pro, to evaluate the preliminary layout and to develop alternatives during the design development phase for Tier 2.

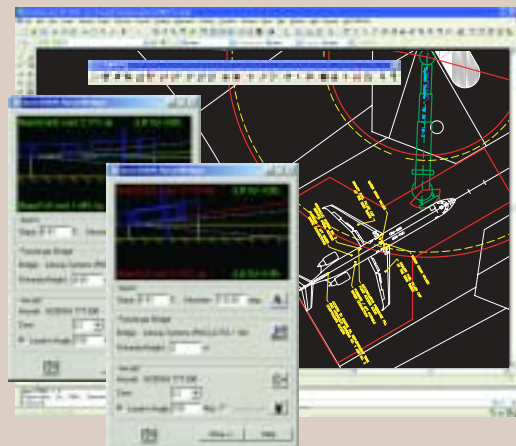
**SOFTWARE SOLUTION.** Traditional design methods, applied to a project of this scope, would require endless trial and error to layout and check slopes of bridges, reaches, and movements of bridges for all the design configurations. As a better alternative, Urban utilized Transoft Solutions' AeroTURN Pro software. Transoft Solutions, Inc. is the company that developed AutoTURN for roadway vehicles. As transportation engineers, Urban has been using AutoTURN for many years to aid in the design of roadways for ground vehicles. When AutoTURN for Aircraft was released, Urban was quick to add it to our Aviation department's

design software suite. Urban used AutoTURN for Aircraft to check the swept path of aircraft wingtips, assess jet blasts, evaluate aircraft clearances, analyze taxiway traffic, and plan airport terminal layouts. We now use AeroTURN Pro to perform in-depth analysis of aircraft PBB layouts.

AeroTURN Pro allows the user to select from an extensive library of two and three tunnel apron drive PBB models from a variety of manufacturers. The selected PBB rotunda is placed and the initial angle of the bridge is set. Limits for the degree of rotation can be defined. The rotunda height and elevation are entered so that they can be used to calculate bridge slope. A mix of aircraft can be assigned to each gate from a large library of models and manufacturers. The aircraft door that the PBB will dock to is selected and the stop line location is set.

AeroTURN helps set the best stop bar location by displaying a side view simulation of the jet bridge that dynamically updates the maximum and minimum bridge slopes as the user moves the aircraft along the lead-in line. Design tools are available that help place the rotunda for a pre-set aircraft position or for the aircraft to be placed for a pre-set rotunda position. The programs analyzes the limits of range and reach capabilities, PBB slopes, and produces both CAD output and reports. Properties can be set, reset and updated that control visibility, color and line styles for the bridge name, cab, rotunda, stairs, physical limit, safety margin, apron slope, and a safety clearance outline.

Urban continually looks for better and more productive design methods. Tools for airfield planning have come a long way since the days when aircraft templates were created from clear transparencies and used on hardcopy engineering drawings to determine the tracking characteristics. AeroTURN Pro has provided a reliable and cost effective method for evaluating existing facilities and assisting in the design of new facilities.



>> A successful design will display in green when the empty and full load slope values are less or equal to the maximum bridge slope. Values displayed in red will indicate the slope has been exceeded.

**Urban Engineers, Inc. is a Planning and Civil Engineering subconsultant to Kohn Pedersen Fox Associates, New York, New York, on the Tier 2 project at Dulles International Airport. Keith Foglia is a Project Manager in the Aviation Department of Urban Engineers, based in Philadelphia, Pennsylvania, USA**