

Airport Consulting

A Quarterly Publication of the Airport Consultants Council

TERMINAL & AIRSIDE PLANNING

IN THE WORLD OF AIRPORT PLANNING, MUCH HAS CHANGED. Some of the old approaches to developing airports would produce erroneous outcomes if applied today. The reconfiguration of security, altered airline route structures and fleet mix changes are among the factors that require terminal planners to adjust their approaches. On the airside, the transition to electronic Airport Layout Plans, the emphasis on reducing runway incursions and the call for consistency concerning Federal Aviation Regulation (FAR) Part 77, Terminal Instrument Procedures (TERPS) and International Civil Aviation Organizations (ICAO) are among the most challenging planning issues. So what advice do the experts have to offer? We asked a terminal and an airside expert to share their views. *Their insights begin on page 4.*

Former TSA Administrator Hawley named ACC 2009 Aviation Award of Excellence Recipient

Award to be presented at the ACC Annual Conference in Lake Las Vegas, NV on November 10, 2009



Edmund S. "Kip" Hawley, Former TSA Administrator, has been selected as recipient of the ACC 2009 Aviation Award of Excellence. He was chosen among a strong field of nominees for his leadership in guiding the evolution of America's airport and aviation security regime during the inception of TSA and when he served as TSA Administrator between 2005 and 2009.

The purpose of this ACC Award is to recognize the extraordinary contributions of an individual, group or organization to the airport and aviation industry that are visionary and innovative, have advanced the airport aviation industry, and have served the general public good. The lifetime achievements of the recipients are also considered. The 2009 ACC Award Committee, led by Chair Woodie Woodward with Woodward & Associates and Vice Chair Gloria Bender with TranSolutions, noted Hawley's service to our nation and dedication to building strong transportation security system.

See HAWLEY on page 15

page 8

PREVENTION PLANNING: HOW CONSULTANTS CAN HELP MITIGATE WILDLIFE STRIKES



page 12

PHOTO REVIEW: ACC/AAAE PLANNING, DESIGN & CONSTRUCTION SYMPOSIUM



page 14

OUT & ABOUT WITH ACC: CAPITOL HILL FLY-IN



By Mark H. Lang / Lang & Associates, LLC

PLAN

Terminal

LOOKING FORWARD

Evolving passenger processing trends are changing airport terminal layouts and space as we know them (see the Spring 2009 edition of *AirportConsulting*). There are other challenges facing planners, including the newest wave of security equipment and operations, changes in the airline fleet and pressures to significantly reduce costs given decreased airport revenue.

The Security Squeeze

BAGGAGE: The evolution of baggage screening equipment and technology continues to enhance terminal operations, but still presents challenges when planning terminal facilities. For example, explosive detection systems (EDS) are achieving throughputs that are more than double that of their predecessors (up to 1,100 bags per hour on the latest model certified this April), alarm rates as low as two percent, and higher operational reliability. Hundreds of scanners, viewing systems and search workstations can be securely networked, resulting in reduced manpower, equipment costs and command station size.

The upside to increased throughput means less EDS equipment. The challenge for terminal planners is that sufficient space must be provided between the ticket counters and EDS machines, and from the EDS machines to the reconciliation

room. While the placement and quantity of diverters can help, buffering needs can result in longer conveyor lengths upstream and downstream from EDS equipment to accommodate bag demand and throughput.

Flexibility is the cornerstone to accommodating potential baggage-related operational and equipment changes. The planning process should allow for growth and system configuration within an existing space, including redundancy/contingency operations. Adequate floor area and room height, structural, civil and mobile electric power (MEP) requirements, equipment maintenance and threat mitigation planning must all be addressed.

PASSENGER CHECKPOINTS: Changes in security checkpoint technologies are also affecting how we plan terminals. The advanced carry-on baggage x-ray equipment now available has multi-view imaging and faster throughput, and fortunately occupies the same footprint as earlier models. Instead, the passenger screening function will affect space requirements.

New whole body imaging equipment, which uses millimeter wave technology, is expected to be installed at many airports in the future. These scanners weigh 1,800 lbs., are nearly nine feet high and have a footprint encompassing 56

square feet. Consultants need to plan for these large checkpoint imaging devices and the effects of their throughput on queuing.

Overall, a checkpoint needs to have adequate space that is well-ventilated and calming to passengers, offers optimized expansion and reconfiguration capabilities, is proximate to a planned command center and can be readily cordoned off automatically from the rest of the terminal area in the event of a security shutdown.

Aircraft and Aprons Alignments

At many airports, airline gates are being leased on an increasingly common-use, or at least a preferential use, basis. Airports should strive to optimize flexibility to park and service a wide range of aircraft types across as much of its contact gate frontage as is practicable, and maximize gate capacity. Good planning allows carriers to group flights amongst one another, cross-utilize personnel and equipment, and streamline connections for passengers.

This can be a challenge given recent changes in the airline fleet. For example, airlines have shifted to using larger regional aircraft that can hold more passengers. These newer and quite popular aircraft, such as Bombardier CRJ-900s/-1000s, and deHavilland Dash 8 Q-400s,

See TERMINAL on page 6

PLANNING

By Mark A. Kuttrus, Wilbur Smith Associates

Airside

NEW REGULATIONS, BIG IMPACTS

The Federal Aviation Administration (FAA) has several programs and updates currently under development that will affect the way airside infrastructure is planned and designed. Three of the most significant initiatives include electronic Airport Layout Plans (e-ALPs) with Airport Geographic Information System (GIS) implementation, improved runway incursion prevention addressed in both Engineering Brief No. 75 (EB75) and FAA Advisory Circular 5300-13, and Federal Aviation Regulation (FAR) Part 77/TERPS/ICAO consistency. What will these changes mean for Airport Sponsors and their consultants?

e-ALP

Paper copies of ALPs are typically housed in multiple locations with varying “latest” versions. These ALPs frequently contain information that is out-of-date or contradicts other data sources used by the FAA lines of business. The day is coming when static paper ALPs will be a thing of the past.

Under a new FAA initiative, ALPs will be replaced by dynamic electronic plans that will be stored in FAA’s database and updated as new airport projects are completed. These electronic Airport Layout Plans, or e-ALPs, will allow multiple disconnected information systems with

conflicting data to become a net-centric system that is readily available to users through a web-based program.

E-ALPs will enable users to pull up-to-date, precise airport data directly from FAA’s Airport-GIS database, on demand. This type of coordination will improve the project review and approval process since accurate airport planning data can be shared among all agencies in an integrated environment. Overall, long-range planning and decision making will be greatly enhanced.

FAA has been developing Airport GIS and the associated e-ALPs for several years and is close to achieving the next milestone. FAA completed the GIS survey standards and the GIS database in 2007. In 2008, FAA developed an internet portal for the submission of airport and related aeronautical data. Currently, FAA is developing the capability within the Airport-GIS application for e-ALPs and digital obstruction charts. This capability should be available in September 2009.

Also in 2009, FAA is rolling-out an Airport-GIS pilot program for the airports in FAA’s Southwest Region. An e-ALP Advisory Circular may potentially be developed by FAA’s National Standards Development Team in 2010. Challenges remain, however, since the FAA will need to determine

the policy implications, version control, pen-and-ink changes, security, financial eligibility, training and technical capabilities before e-ALPs can be implemented successfully.

Runway Incursions

Nearly half of the most serious runway incursions (A&B) involve taxiway-runway crossings during departure mode. To help prevent these incidents, the FAA released Engineering Brief No. 75 in late 2007. The EB provides guidance on the planning and design of taxiways and aprons, with the goal of evaluating the overall airfield layout plan with runway safety as the highest priority. Although the strategies are only recommendations, the forthcoming re-write of FAA Advisory Circular (AC) 5300-13 Airport Design will incorporate the key provisions of EB75. Until the rewritten Airport Design AC is released, not all airports or consultants may be aware of the recommendations and implications on airside planning and design.

The risk of a serious incursion is higher for the first third of the runway. The EB recommends that runway crossings occur at the last third of a runway, where departing aircraft should be airborne or arriving aircraft should be slowing or exiting. A negative consequence of this recommendation is more airfield delay at certain large hub airports, depending on their runway

See AIRSIDE on page 7

feature low fuselage profiles and substantial lengths that can present challenges in terms of planning for loading bridge access. Ways to address this include:

- Planning approaches that propose sloped-floor bridge fixed sections, switchbacks, offset holdroom door locations and even angled parking, when practical, to remain within ADA guidelines.
- Locating the apron service road beneath bridge fixed sections alongside the concourse, rather than at the apron edge, to capture needed aircraft parking depth.
- Optimizing cross-utilization of hydrant fueling pits with efficient parking layouts so as to minimize the need for additional pits.
- Installing gate-checked baggage lifts for small regional aircraft along the concourse wall to allow for unencumbered movement of the bridge. This ensures that passengers queue in the holdroom for their bags, rather than inhibit flow by congesting the interior of the bridge near the aircraft door.

Air carriers are also replacing older, less efficient widebody aircraft on intercontinental routes with newer models that are considerably longer than their predecessors. There are fewer Boeing 747s and MD-11s in airlines' fleets each year, while models such as the Boeing 777-300s and Airbus A-340-600s are frequently their replacements. With exceptional lengths approaching 250 feet, many concourse aprons lack sufficient depth to park these aircraft nose-in. However, parking at an angle can cause space conflicts with adjacent gates.

Finally, despite domestic trends toward using larger regional aircraft on more domestic routes, some airlines are also working toward increasing gate flexibility for their domestic mainline fleets. One example is Continental Airlines. Continental's Ron Schiaffo, a corporate real estate project manager for the Houston-based airline, manages facilities projects for the carrier's mega-hub at Newark/Liberty International Airport (EWR). Schiaffo explains that Continental's "Operation Clean Slate" initiative reexamines concourses to ensure that its mainline gates can accommodate aircraft at least as large as the Boeing 757-300, the industry's longest narrowbody. Making the best use of gate capacity is the ultimate goal, even where holdrooms, loading bridges and fenestrations (the placement of windows in a building) must be modified or relocated.

O&M Costs and Terminal Mothballing

Revenue reductions from shrinking airline leaseholds, landing fees and concessions combined with airline consolidations are causing a growing number of airports to gain better control of operations and maintenance (O&M) costs. Unfortunately, mothballing portions of terminal facilities is also becoming increasingly commonplace.

Pittsburgh International Airport, Cincinnati/Northern Kentucky International Airport, Kansas City International Airport, Dallas/Fort Worth International Airport and Lambert-St. Louis International Airport are among those airports that have closed portions of their ter-

minal facilities. These airports are also seeking potential utilities savings and wish to be able to bring these facilities back on-line with relative ease when circumstances improve.

Airport consultants can plan for unforeseen facilities closures by feeding mechanical, electrical and plumbing systems so they can be sectionalized separately. While full fire protection would be needed on an ongoing basis, utilities such as potable water and heating/air conditioning could be divided with valves in branch lines to create defined terminal zones that can have their services scaled back, if warranted. While it may increase development costs upfront, considerable savings may be realized should an airport need to shut down these facilities.

While the thought of planning airport terminals for their potential partial shutdown in the future is undesirable, planning ahead will allow reduced O&M costs if such a closure were to become necessary, while maintaining unencumbered traffic flow and access where needed.

Conclusion

Change is nothing new so today's planners are not likely shocked by this latest wave of events and issues. All the same, it is crucial that we all remain alert to these trends and share best practices among the industry. Doing so will allow consultants to assist airports in developing today's terminal facilities and meet the known and unknown events of the future. ➔

TERMINAL CLOSURES: CASE STUDIES

➤ US Airways' de-hubbing of **Pittsburgh International Airport (PIT)** and the carrier's subsequent drawdown of much of its remaining flights have challenged PIT Director of Planning and Environmental Affairs Rich Belotti. While competing airlines have bolstered service to some extent and the number of gates allocated as common-use has increased, the net changes in flights and passengers at PIT are sharply down. The commuter terminal has been closed and regional flights have been moved to the midfield terminal. More recently, the ends of concourses A and B have been closed. The erection of drywall partitions with access doors is making this possible. Belotti indicated that there is scaled-back HVAC service in the closed areas and periodic flushing of water systems so as not to incur any building degradation. When circumstances improve, these facilities will be

able to be brought back on-line with relative ease. Meanwhile, the Allegheny County Airport Authority (ACAA) is embarking on a Comprehensive Facilities Plan to identify cost saving measures and potential new revenue streams in response to underutilized facilities. Another study will address energy cost saving measures.

➤ Although **Cincinnati/Northern Kentucky International Airport (CVG)** remains a Delta hub, it has seen reductions in passengers, flights and aircraft gauge since its peak in 2005. With the merger between Delta and Northwest airlines now underway, it is unclear how CVG will continue to fit within the combined network. Northwest's fortress hub at Detroit, its smaller hub at Memphis and the relative proximity of Delta's enormous operation at Atlanta are factors on the mind of Bill Martin, Director of Planning and Development at CVG. Martin noted the 2007 mothballing of Terminal 1 as an example

of cost-saving initiatives being taken by the airport. Although the Kenton County Airport Board's administrative offices remain upstairs, lights have otherwise been dimmed, heating and cooling have been scaled back and janitorial services have been reduced in Terminal 1's ticket and bag claim lobbies as well as in its concourse. Cincinnati's configuration of unit terminals may provide simpler solutions to temporary facilities closures than a consolidated terminal offers. As recently as January 2009, standalone Concourse C, which served Delta Connection's Comair operation and accessible only by bus, also was shuttered. Regional flights, like those at PIT, were relocated to mainline gates. Martin points out that these facilities can be brought back on-line fairly easily when demand arises from potential new entrant low cost carriers. He added that with the closure of Concourse C, every effort was made to eliminate unnecessary capital costs and minimize O&M costs associated with a mothballed structure.

AIRSIDE continued from page 5

configuration. More aircraft can be processed when crossing at the first third of the runway, rather than the last third, since aircraft can complete the action of crossing before the next aircraft lines up for departure.

One solution the EB offers to reduce runway crossings and increase airfield capacity is an end-around taxiway. Recently approved by the FAA, this type of taxiway allows arriving aircraft to continue toward their gates and avoid holding for a crossing clearance while independently bypassing the departure runway. Both Hartsfield-Jackson Atlanta International Airport and Dallas Ft. Worth International Airport have one end-around taxiway and have experienced reduced arrival delays while alleviating the risk of this type of runway incursion.

EB75 has implications on the preparation of ALPs as well. Taxiway configurations around terminal aprons should be evaluated to reduce runway incursion risk, whether new taxiways are being proposed or pavement reconstruction is scheduled in the short term. Whenever possible, pilots should be prevented from taxiing directly from their gate onto a runway without making any turns. Pilots should be forced to make 90° turns between the apron, parallel taxiway and runway to promote situational awareness.

Part 77/TERPS/ICAO Consistency

FAR Part 77 was made into law in the mid-1970s as a mechanism to identify obstacles in the vicinity of airports, and it has not significantly changed since. Terminal Area Procedures (TERPS) are used in part to determine if the Part 77 obstacles are hazards that need to be either removed or flight procedures altered to maintain airspace/aircraft safety. TERPS are regularly updated, especially with new types of GPS approaches becoming available. However, the imaginary surfaces involved with Part 77 and TERPS are different and do not fully correlate, leading to inconsistencies. For example, Part 77 surfaces could be clear of obstacles but a pole could penetrate a TERPS missed approach surface or departure surface and affect runway minimums. Hopefully, a future revision of Part 77 will correct these inconsistencies and will be acceptable to users and governmental agencies alike. In the mean time, airports and consultants need understand Part 77 and TERPS to protect the airport from negative impacts from both on and off-airport development.

Another area where inconsistencies exist is the standards followed by the rest of the world's aviation community. One of these issues involve the ICAO standard that requires airports serving international airlines to provide a clear 62.5:1

slope for departing aircraft to account for various one engine inoperative (OEI) performance surfaces. In 2006, FAA included information about the OEI surface in Change 10 to the Airport Design AC, but only for informational purposes. This will currently be in effect on January 1, 2010. Before Change 10, the 50:1 approach slope was typically the surface used to establish airspace protections for off-airport development height restrictions. The full rewrite of AC 5300-13 will hopefully eliminate these inconsistencies and provide guidance on how to address the impacts that will likely result from meeting these more consistent and restrictive standards.

Conclusion

The successful implementation of these changes will allow the FAA, Airport Sponsors and their consultants to accurately communicate important airport infrastructure changes, help prevent runway incursions through taxiways and aprons design guidance, resolve overall runway protection inconsistencies and improve overall airport planning tools. ✈

ACI-NA / ACC / FAA

AIRPORT PLANNING WORKSHOP

DECEMBER 7 - 9, 2009

KANSAS CITY, MISSOURI

Airport planning has been redefined in recent years by new frontiers and by issues that extend beyond the latest Master Plan advisory circular. Airport Planning Redefined tackles: airport property use and revenue generation, planning for sustainability, electronic mapping, and safety risk assessments. If you feel that it's become an understatement to say "airport planning is a unique enterprise that requires a broad set of specialized skills and understanding", this workshop is for you. Planning skills extend across the fields of planning, engineering, environmental science, financial planning, economics, community outreach, airport operations, and technology. Staying on the cutting edge of all of these disciplines has always been challenging, and current industry conditions have made it more important than ever to understand the available tools in the tool box, and when they are appropriate for the planning task at hand.

This course provides invaluable insights that will enable those involved in planning airport improvements—from small near-term projects, to larger long-term projects—to be more effective.

For more information visit www.ACConline.org.

