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discussed in this space, in a previous issue, the advent of Very Light Jets (VLJs), their positive impact on our industry and their potential impact on our airspace and airports.

An additional positive aspect of VLJs was brought to my attention recently in a meeting with Rick Crider, CEO of Gainesville Regional Airport, in Florida. Crider and I got together at the annual National Business Aviation Association (NBAA) convention in Orlando, as this issue was going to press.

VLJs are the subject of much conversation and speculation here at the convention because they are relatively new and because they have attracted significant amounts of capital investment from both traditional aviation and non-aviation sources. Several rosy general aviation industry forecasts were released this week at the convention, most of them taking into account the introduction of VLJs to the marketplace. Although the various forecasts present slightly different numbers, they are all extremely positive.

Crider has an airport success story to tell, which involves VLJs, Eclipse Aviation and Gainesville Airport. DayJet, one of the first-to-market on-demand air taxi services employing the Eclipse 500 VLJ, has picked Gainesville as one of nine “dayports” located in Florida. Gainesville Airport, which serves three scheduled airlines and a lot of general aviation traffic, was selected for its strong business climate and demand for direct regional access. The city is also home to the University of Florida, a community college and a major medical center.

The concept behind DayJet is to offer per-seat, on-demand service primarily to business travelers making short trips—or in other words, making the convenience of corporate jets available to a much broader market than traditionally has been the case.

As an added economic development bonus to Gainesville, Eclipse is building a 61,000 square foot maintenance facility at the airport. The factory service center is slated to open in early 2007. Half of the $11.2 million construction project was funded by the Florida Department of Transportation (FDOT) Aviation Work Program, with the other half funded by traditional bank financing. Crider says that tax incentives were also part of the package offered to Eclipse and DayJet.

Crider makes it clear that Gainesville’s success story is the hard-won product of a cooperative effort by the airport authority, Eclipse and DayJet officials, the local Chamber of Commerce, and regional and state government. A host of individuals played a part and many people will benefit from the creation of new business and new jobs, with a potential of 160 employees at the Eclipse maintenance base and 60 at the DayJet dayport. A large number of the jobs are high-paying, skilled labor jobs. According to DayJet, the combined average economic impact to the community of both the DayJet base and the Eclipse facility during the first three years of operation will be more than $26 million—an impressive number.

Crider’s advice to other airports looking to build their economic base: “Gainesville Airport is seen as an economic engine. Be flexible and look for new business paradigms and evolving trends.” Solid advice from someone who knows.
Sea-Tac Translation Service Aids International Travelers

Seattle-Tacoma International Airport has responded to growing foreign language interpretation needs with a language access program that uses dual handset phones to provide passengers with information in their own language.

The airport used to be served only by a Japanese visitor center and some on-site interpreters assigned to specific flights. In the last few years, however, Sue Hansen Smith, the airport’s customer service manager, noticed a much wider spectrum of international visitors, and saw the need for the airport to update its language access program to include additional languages.

To create a cost-effective, user-friendly way to serve a growing number of multi-lingual travelers, Hansen Smith began working with Language Line Services, an interpretation service, to integrate Language Line dual-handset phones throughout the airport. These phones enable passengers to have a three-way conversation with an airport customer service agent and interpreter. The phones are readily available in customs, immigration, agriculture and the main terminal, along with cordless versions in other locations.

“We want international travelers to feel welcome when they arrive at Sea-Tac Airport,” said Port of Seattle Commission President Patricia Davis. “Language Line Services’ dual handset phones make it possible to provide interpreter services to passengers in languages we were not able to accommodate in the past. We’re able to provide travelers with information in their native languages, which makes it much easier for passengers to understand the Customs and Immigration process, enhance security procedures and expedite passenger processing.”

The Language Line Service has significantly increased the number of travelers who can be accommodated, providing translations in 170 languages.

“Language Line Services receives hundreds of call a month from Sea-Tac,” Louis Provenzano, Language Line Services president and chief operating officer. “In August alone, Sea-Tac requested interpreters in 29 different languages, the most popular being Korean, Vietnamese and Mongolian.”

Phoenix Sky Harbor Opens Areas of Rescue For People With Disabilities

Phoenix Sky Harbor International Airport has created areas of rescue to be used by people in wheelchairs or those with limited mobility in the event of an emergency, when elevators may be shut down, leaving only stairs by which to exit the building. The areas of rescue are well-marked with a sign showing a wheelchair symbol, and most often are located in the landings of stairwells.

During an emergency, firefighters will check the areas of rescue for peo-
ple who need to be transported or need assistance down stairs. In addition, each area is equipped with an intercom system that provides two-way communication with the Sky Harbor Communications Center. Instructions are located at each site telling visitors what to do in case of an emergency. In addition, there are Braille-enhanced “You are here” maps in these areas. When the communications center is contacted via intercom from one of these locations, the dispatchers can automatically identify the location of the caller. The intercom allows the person in need of assistance to talk to the communications center dispatcher.

The area of rescue assistance project started in Terminal 2, where there are five such locations behind security in the gate areas. There also are ramps from the lobby to the exits of Terminal 2. Areas of rescue are currently being planned for Terminal 3. When the project is finished, there will be four areas of rescue in Terminal 3. They will be located on balconies extending from stairway landings, off of Level 2 in the lobby area. In Terminal 4, there are six in the stairwells off the lobby area of Level 3 (pre-security) and several also available behind security.

**Los Angeles Airport Receives Alternative-Fuel Airfield Buses**

Los Angeles International Airport (LAX) has received 12 high-capacity airfield buses from North American Bus Industries (NABI) that operate on compressed natural gas.

**U.K.-based National Express Group PLC announced that it is talking to interested parties about assuming the remainder of the lease the company now holds for New York’s Stewart International Airport. National Express said it determined to exit the airport lease to focus on its core bus and train business. “Airports are not planned to be part of the core portfolio long term,” the company said. National Express said it expects to make a selection in the near term of the new lease holder, and complete the transaction by year-end....**

**The New Orleans Aviation Board has adopted a relief package to assist small businesses and subtenants participating in the gifts and concessions program at Louis Armstrong New Orleans International. When Hurricane Katrina struck in August 2005, the small business owners/subtenants of New Orleans Air Ventures, the airport’s news and gifts master concessionaire, were earning a net cash flow of approximately $365,000 annually. Since Katrina, with the downturn in passenger traffic, the annual net cash flow has been reduced to approximately $60,000, a $300,000 negative impact, the board said. The relief package approved for the concessionaires is expected to total more than $1.1 million in additional cash flow over four years. The program is expected to cost the aviation board approximately $250,000 annually....**

**IBM has been chosen to provide a new IT system for Letiste Praha a.s. (Prague Airport) in the Czech Republic. The new IT system will enable the airport to improve service and lower costs, IBM said. As part of the three-and-a-half year agreement, IBM will implement the solution over the next 16 months, and maintain and manage the system....**

*Retail Breifs are on pg 35.*
At a cost of $659,000, each bus has seating for 22 plus standing capacity of 80 with carry-on bags, including space for wheelchairs and strollers. There are two wheelchair ramps.

The new higher-capacity airfield buses are needed to accommodate the arrival of new large aircraft, such as the Airbus 380, that will begin service at LAX. Seven international air carriers have announced plans to operate the A-380, starting in late 2007 or early 2008 through 2010. The A-380 can carry between 555 and 800 passengers, depending upon seating configuration.

The 60-foot-long buses will transport passengers between the terminals and the remote boarding gates more efficiently than the airport’s existing fleet of 20 airfield buses that accommodate 60 to 80 passengers each. These new buses replace five 22-year-old diesel buses that are at the end of their operating service life.

The new buses are state-of-the-art, alternative fuel, ADA compliant, fully air-conditioned and will be useful on and off the airfield if there is a diversion for on-airport activity,” said Mark Baskin, a bus operator supervisor. “LAX bus operations logged 659 operations carrying 123,282 passengers in April alone so these buses will more easily accomplish that.”

Built in Anniston, Alabama, by NABI and driven to the facilities of its regional service division in Ontario, Calif., as part of the company’s road test program, the buses were then delivered to LAX.

There are nine cameras on each bus for security purposes.

Horizon Air, United Airlines Help Expand PDX Food Waste Diversion Program

Portland International Airport (PDX) is expanding its food-waste diversion program with assistance from Horizon Air and United Airlines.

Horizon serves PDX travelers about 600 cups of coffee each day. All that coffee generates a lot of coffee grounds that are now being turned into compost as part of the PDX food-waste diversion program. United Airlines is supporting the program by collecting food scraps from employee lunchrooms at PDX.

Collecting food waste from airlines is the newest phase of the expanding food waste diversion program. Since its launch by the Port of Portland in 2003, the program has sent about 550 tons of food waste to a regional composting facility. This year alone, the program will divert from landfills an estimated 240 tons of food waste, including food preparation scraps, coffee grounds, plate scrapings, food-soiled paper napkins and towels, and other compostable paper fibers like waxed cardboard. The food waste comes from about two dozen PDX restaurants, hotels and flight kitchens, and now from airlines.

These companies and others also recycle paper, cardboard, glass, metal, plastic bottles, pallets and
even cooking grease, airport officials noted.

“We like to use our resources wisely,” said Nikki Meler, Horizon Air food and beverage supervisor. “Contributing our coffee grounds to the food waste diversion program is a great opportunity to not only avoid sending material to the landfill, but also help create a valuable commodity—compost.”

Horizon collects its coffee grounds in five-gallon buckets. Employees then dump the loose coffee grounds into food-waste containers provided by the port. The port sends food waste to the Metro transfer station, and from there the waste is processed at Cedar Grove Composting facilities, located in Maple Valley and Everett, Wash. Once processed, waste from the airport may wind up in a nearby home improvement store as high-quality compost and soil amendment.

Gresham Sanitary Service, the port’s food waste hauler, collects food scraps from PDX and partner businesses located near the airport as part of one collection route, rather than making separate hauling trips. That approach offers participating businesses reduced transportation costs, and helps reduce air emissions. Gresham Sanitary Service exclusively uses Biodiesel (B20) in all of its waste hauling trucks, further protecting air quality, officials noted.

**USA3000 Launches Flying Billboard Promotion**

USA3000, St. Petersburg-Clearwater International Airport, and the St. Petersburg-Clearwater Convention and Visitors Bureau are launching a new advertising promotion to celebrate the airline’s third anniversary of service at the airport—a flying billboard. Mounted on the tail of a USA3000 A320 aircraft is a wrap-around photo of one of Pinellas County’s beaches with www.Floridasbeach.com on one side and the airport’s tagline, “Your Gateway to Tampa Bay,” and web address, www.fly2PIE.com, on the other.

“We are thrilled to team with USA3000 on this unique promotional idea,” said Carole Ketterhagen, executive director of the convention and visitors bureau. “This is a fun, creative way to generate exposure for our brand and our destination.”

The airline said it has been successful at the airport, prompting it to bring back in-flight meal service as of October 1. USA3000’s first in-flight magazine, *Roam*, also debuted.

A Horizon Air employee empties coffee grounds into food waste containers provided by the Port of Portland.
over the summer. The carrier serves St. Petersburg-Clearwater International with 25 flights a week to seven destinations.

**Dulles Moves Ahead With AeroTrain Development**

Construction on the Washington Dulles International Airport AeroTrain system is moving apace, with a planned launch of the first phase of the project in 2009.

Designed to replace most of the mobile lounge “people movers” that have been used since the airport opened in 1962, AeroTrain is a rubber tired, automated train system that will run underground and connect the airport’s main terminal to all the concourses.

The train system is part of the Dulles Development expansion project dubbed “D2,” a long-term capital construction program in response to the significant growth the 12,000-acre airport has experienced in the past 16 years. In 2005, the airport served 27 million passengers, compared to 10.4 million in 1990. Aircraft operations have more than doubled, from 242,000 in 1990, to over 500,000 in 2005.

The main terminal train station is being built on the airfield side, 60 feet below ground. It will span the entire length of the terminal—1,600 feet. When the final phase of the AeroTrain system is complete—designed as one continuous loop between the main terminal, the four midfield concourses and a future South Terminal—there will be 10 stations, 63 vehicles and more than seven miles of track. The train will travel at 42 mph, with an estimated travel time between stations of 72 seconds. Waiting time for a train will be 1.9 minutes.

In order to minimize the disruption to current buildings and airport activity, a new Austrian tunneling method is being employed that grinds the rock face in layers. Shotcrete is then applied immediately to reinforce the exposed tunnel walls. The boring machine, known as a “mole,” bores through solid rock about 55 feet below grade. Pre-cast concrete wall-lining segments are put into place by the mole as it moves forward. Width of the tunnels is 21 feet; depth is up to 51 feet.

The AeroTrain system includes a maintenance facility, which is being

USA3000 is promoting its service to St. Petersburg-Clearwater International with a “billboard” on the tail of an A320 aircraft.
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It will accommodate 24 train cars inside the building, and an additional 20 cars in the yard, and will also house the train system’s operations control center.

An additional part of the expansion is a new 9,500-foot runway, which will be the airport’s third parallel north/south runway. It is scheduled for completion in 2008. An environmental impact study has been completed for a future fifth runway.

Dulles Development “is a massive public-works project when taken in its totality,” commented James Bennett, A.A.E., president and CEO of the Metropolitan Washington Airports Authority. “We are constructing a train system, building passenger facilities, building a new runway and reconstructing the entire security screening area in our main terminal to improve service to our customers, make the passenger experience much more efficient and to reduce the lines that crowd our ticket counter level.”

In 2005, more than $450 million was spent on Dulles Development, employing 2,600 people in construction-related jobs.

**SEADOG Ready For Emergency Communications**

The Florida Airports Council (FAC) and the Southeastern Airports Disaster Operations Group (SEADOG) have joined forces to ensure that airports in their region have communications in times of emergency. That communication comes in a 20-foot-long, tandem-axle trailer equipped to provide a portable communications platform for airport operators when normal communication channels are down. The trailer, previously used in a NASA test program, was donated to Pensacola Regional Airport by the Florida Department of Transportation (FDOT) and Harris Corp.

The trailer is a self-sufficient mobile command center that houses a seven-kilowatt generator, air conditioning system, computer work stations, weather sensors and conference area and VHF radio communication station capable of patching multiple aircraft frequencies and serving as a temporary tower.

With the purchase of an Inmarsat Broadband Global Area Network (BGAN) system, the trailer has, in addition to serving as a temporary working environment, the capability of providing the following communication abilities without reliance on area infrastructures: six phone lines for voice or fax communication, Internet access and e-mail at 464 kbps for computer workstations; wireless Internet and e-mail within 500 yards of the trailer; cordless telephone abilities and data streaming at 128 kbps for video, audio or file transfer.

The Inmarsat BGAN system operates through a dedicated satellite launched in 2006 and has redundant receiving points in Georgia and California. The trailer has a dedicated phone number assigned for incoming calls or faxes.

FDOT awarded the FAC a $9,000 grant to purchase the satellite communications system and to fund estimated operational costs associated with activation and satellite system utilization (air time). Several companies equally contributed their services and products to equip the trailer, including the Southeast Chapter of AAAE, which is arranging for $3,000 in additional computer equipment.

**San Diego Airport Offers Braille Screening Assistance Cards**

San Diego International Airport reports it has become the first airport in the nation to use Braille and large-format text assistance cards to make the security screening process at airport checkpoints easier for airline passengers with hearing and/or visual disabilities.
The cards—with messages written in Braille and repeated in extra large font size—cover the 12 most frequently asked questions at the security screening checkpoints at San Diego International Airport. The assistance cards are available for use by TSA screeners at all the airport’s security checkpoints.

The cards were developed by the San Diego County Regional Airport Authority, which operates the airport, with assistance from local TSA staff. Proposed questions were then shared with several organizations that represent people with disabilities for input, including the American Association of the Deaf-Blind, the American Council of the Blind, the California State Independent Living Council, the city of San Diego Disability Services Program, the National Organization on Disability and the San Diego Center for the Blind.

TSA has indicated to the airport authority that use of the cards at San Diego International may be a model for similar programs at major airports nationwide.

“We are pleased to be at the forefront of providing innovative customer service initiatives like this for our guests with visual and/or hearing disabilities,” said Thella Bowens, president/CEO of the airport authority. “This program is in the same spirit of many other innovative programs we’ve launched at San Diego International Airport, including an assistance animal and pet relief area, a training guide for communicating with people with disabilities, airport familiarization tours, and more. It’s another step forward in accomplishing our goal of 100% accessibility for all our customers.”

The idea for the specialized assistance cards was originally conceived following the 2003 bi-annual conference of the American Association of the Deaf-Blind, which was held in San Diego.

New Computer Stations Help Travelers Stay Connected At Austin-Bergstrom

PowerPort computer stations now offer passengers at Austin-Bergstrom International Airport a new way to stay connected and productive while traveling through the airport. The automated stations supply Internet access, laptop rentals, battery and cell phone chargers (most cell phone charger cords provided), USB ports for uploading files, the ability to download music, and free printing. PowerPort computer stations are located on the concourse across from Gate 6 and between Gates 15 and 17. Owned and operated by Power Station LLC, Austin-Bergstrom is the sixth airport nationwide to receive the stations.

PowerPort stations have four walk-up computer stations and two laptop stations. Customers can rent laptops that may be used anywhere inside the airport. For Internet access, users must stay within 300 feet of the PowerPort station. Charging bays allow customers to leave their laptop, cell phone, or other electronic items in a secure, locked bay while they are being charged.

All major credit cards are accepted, and cash is accepted for the walk-up computer stations only. Prices range from $2 for 10 minutes of walk-up Internet access using your own laptop to $2.50 for 10 minutes using a PowerPort computer and $6.95 per hour for a wireless laptop rental and Internet use.
This issue of Airport Magazine is dedicated to Tom Suzuki, the founding art director of the publication who died a few weeks ago after a short illness. Thanks to Tom, our association produced a magazine that, from day one, received many design awards and has been used as a standard for association publications. But, as usual, there is much more to the story than that.

In 1988, when AAAE decided to publish a bimonthly magazine, expectations were high. AAAE wanted a first-class product, but our plan was for it to be designed entirely on a computer, thinking that it would be easier to produce. While that might not sound like a tall order, it was in 1988. At that time, magazines were designed by hand, with only a few small pieces produced using a computer. All the graphic designers I interviewed said a top-notch magazine could not be designed on a computer.

Enter Tom Suzuki. Among his long list of accomplishments, Tom was the founding art director for the highly acclaimed Psychology Today, and the former art director at Time-Life Books. Tom responded to our challenge with gusto, which was his approach to all things in life. Not once did he try to dissuade us from our mission. Instead, he proved the others wrong and created an elegant, well-designed publication produced entirely on a computer — and on time.

But Tom was much more than an art director to anyone who came in contact with him. He was a teacher of art and of life. His interests were endless, as was his patience. Tom initiated me into the magazine world and, I am sure, used a lot of that patience teaching me the rules of magazine design. But never, even at 4 a.m. before the first issue was to be sent to the printer and we were still making changes, did Tom’s enthusiasm wane. In fact, I think as the hour grew later, Tom got even more philosophical about the important things in life — like type fonts, for example. Perfection was infinitely more important than sleep!

One of Tom’s strengths was that he made design work for the reader. He never forgot that design should always enhance readability. And his discipline resulted in a magazine that was a joy to read. The knowledge that Tom Suzuki shared with me and the Airport Magazine staff will never be forgotten. But, more importantly, we will never forget the man himself. His chosen profession was art director, but the way he lived his life was the true gift to all who knew him. His keen intellect was paired with a passion for sharing his ideas and an almost child-like excitement about the world around him.

Thank you, Tom, for helping create Airport Magazine and for all you have done for us and our readers over the years. You will be deeply missed and never forgotten. — Joan Lowden
One of the world’s busiest airports can be found in a place that might surprise you. Phoenix Sky Harbor International is expanding to meet the needs of a city that now ranks fifth-largest in the U.S. It easily accommodates over 40 million passengers per year with the largest rental car center in the country. As US Airways headquarters and home to Southwest Airlines, Phoenix Sky Harbor serves non-stop flights to more than 100 cities in the United States, Canada, Mexico and Europe.
Dynamic Signage is a subject that conjures up many images and ideas in the minds of airport management. There are many aspects to dynamic signage based on the solution it provides. There are many areas in and around airport terminals where directing, guiding and informing travelers is challenging. Most airports have service representative groups to handle just this aspect of traveler assistance. In many cases legacy terminal design, subsequent renovations and the mix of new and old complicate wayfinding and providing timely information.

Several factors have created new needs and challenges for traveler guidance and information. One is the increased volume of travelers since September 11, which has added congestion and delays to getting where one needs to go. Changes in airline food services and security issues require public spaces to accommodate travelers during longer dwell times and layovers. And the last and most significant trend is the growing number of airline carriers and how airports serve the traveling public with a broader range of choices.

The traditional use of Flight Information Display Systems (FIDS) has evolved over the last five years to incorporate new technology and capabilities. We now see many flat-panel video screens in various locations at gates and holding areas that provide far more information than basic arrival/departure times and locations. New multi-user FIDS (MUFIDS) are no longer provided exclusively by the airlines and require airports to provide this information for all carriers. In addition, new content such as local weather, visual paging and advertising have become an integral add-on to flight information. These systems are information rich, and with the use of liquid crystal displays (LCD) or plasma video screens provide a plethora of information in a graphical or visual nature, but are not effective in all locations or other applications.

These locations or applications are what I would refer to as decision-making points for the traveler. For example, “Where do I park?” “Where do I go for ...?” “Where is my airline drop-off and pickup location?” Many of these questions need to be answered well ahead of decision-making points on crowded roadways, at parking facility entrances or exits, and curbside. Inside the terminal, this same information needs to guide travelers to security screening, concourses, airline gates, customs inspection counters, travel services and amenities.

Large and small airports also support many airlines that operate on certain days of the week. And many terminals have multiple parking facilities located near a terminal supporting a group of airlines. These are two other examples where LCDs or Plasma screens are not effective and cannot address outdoor locations or larger groups.

Dynamic signage can provide many useful purposes. It can guide and direct travelers with status, promotional, emergency and airline directory listings that inform travelers where to go, and when and how to proceed. Dynamic signage can be controlled via automated, integrated AOIS systems or through dedicated stand-alone control systems.

Dynamic Signage Leads The Way

By DeWayne Anderson

DeWayne Anderson is Aviation Market Manager for Daktronic.
Who is improving efficiency and security at airports all across the US? We are.

We’re Siemens, a global innovation company helping the needs of businesses and communities right here in the US. One of our specialties is providing integrated services and solutions to enhance operational efficiency and strengthen the integrity of airport security. From check-in through take-off to landing, we deliver solutions to increase passenger comfort, luggage and cargo security, and airfield safety. We are the largest manufacturer of luggage handling systems, and we maintain passenger and luggage screening equipment at virtually all US commercial airports. And soon we’ll deliver the largest airport-wide 100% in-line baggage security screening system in the US. We also provide airfield lighting control systems for sixty-five of the nation’s busiest airports, but unless you’re one of the 70,000 Americans that we currently employ, you may not have heard of us. We’re Siemens.
Top 25 Departure Airports Worldwide
November 2001 vs November 2006

Ranked by Available Seats

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Totals                                    |           |           | 61,391,837      | 63,872,125        |

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Airport language is a spectacle, an interface for social relations between humans and machines. Signage intensifies social relations—reconfiguring territories of geophysical/architectural space into territories of recognition that speak to a productive power of language that is fundamentally non-representational. Airports are walked, the signs don’t accompany or reflect upon the airport, they are machined into it. The traveler navigates through a highly textually mediated space where the signs not only enact semioticised territories but also directly intervene into the material machinic processes of traveling.” So wrote Gene Fuller in his research paper, “The Arrow—Directional Semiotics: Wayfinding in Transit.”

That’s all well and good—and maybe a bit too esoteric—but when it comes to installing airport Flight Information and Display Systems (FIDS) and directional signs—either as part of an airport terminal renovation or a new terminal construction project—the decision for airport managers may be succinctly summarized as this: how to get the most sharp, visible and readable displays at a reasonable cost. But one thing seems clear: the same digital screen technology making its presence known in the home consumer market, in the form of crystal-clear, flat-screen televisions, is quickly establishing a solid presence in the world’s airports.

In some ways, the choices for airports are more strictly defined because of the specialized requirements. With the possible exception of some of the smaller signs in baggage-claim areas and curbside pickup and drop-off areas, most signs must be relatively large, easily readable from distances as great as 1,000 feet, easily updated and durable enough to run 24/7. Colors come into play, too. More than eight percent of the male population is color blind and has difficulty distinguishing between red and green. A smaller percentage of men suffer from a deficiency in perceiving the difference between blue and yellow. Less than one percent of women suffer from any form of color blindness. It’s not an issue that one might expect to deal with in terms of designing signs—until you realize that red is often associated with emergency notification—a real possibility.
in our security conscious post-9/11 environment. Color hue, saturation and brightness are also important.

HIGH STAKES
Gene Coyne is vice president of sales with Trans-Lux corporation, a major manufacturer of displays not only for airports but also for casinos, television studios and the New York Stock Exchange—harsh, unforgiving environments.

“We’re used to dealing in an airport environment where there is too much at stake for screens to go wrong,” said Coyne.

Trans-Lux has spent the last three years installing new signs at Miami International Airport as part of a concourse expansion project. Coyne described the signs, installed in the ticket-counter areas, international arrival terminal, concourses, curb displays and baggage-claim areas, as “high-bright, amber, LED displays.”

“White is better for visibility but it’s too expensive,” added Coyne, “and red and green are not viewable by color-blind people.”

Coyne detailed the key advantages of LED, or light-emitting diode, signs. “The life expectancy of an LED sign is about 100,000 hours, or about 7.5 years if the sign is on 24/7. Plasma has a much shorter life expectancy and certain images will eventually burn on to the screen, much as images can be burned on to the older computer CRT monitors.”

Although Trans-Lux sells plasma and LCD (liquid-crystal displays), Coyne makes it clear that they are designed for other applications such as videos, and “you must be right on top of them to read them. They are also not designed to display a lot of information, such as you need with an airport flight information display.

“With LED you can use large, 2.1-inch characters and passengers can see the signs from a distance,” said Coyne.

The Greater Toronto Airport Authority (GTAA) recently purchased nine full-color, LED directional signs for Toronto’s Pearson International Airport. They wanted color signs in part because the airlines like to see their logos accurately displayed in full color next to their flight arrival and departure information. Coyne qualified the term “full color.”

“Our RGB [red-green-blue] display uses 64 colors,” he said, “and a Sony Jumbotron—used mostly for video—uses 16 million colors or shades. If you’re not doing video, you don’t need that many colors.”

The Toronto signs are bright enough to be “sunlight survivable,” according to Coyne, and to contrast with the front of the new terminal, which is all glass.
When Toronto was considering the Trans-Lux display purchase and asked about reliability, Coyne told them that the same signs had been installed at Miami for more than two years and there had not been one service call. “They were impressed,” he added.

The signs are slated to be installed by year-end. Coyne pointed out an additional advantage with Trans-Lux products: the software platform is the same for both indoor and outdoor displays.

REVENUE GENERATION
In addition to the practical aspects of signage, generating advertising revenue for the airport plays a key role in certain signs. Frederick Krum, airport director of the Akron-Canton Regional Airport, described how a new scrolling-type of color, backlit sign has not only improved the aesthetics of the atrium in the main terminal building but has also generated revenue for the airport.

“The movement of the display attracts the eye and provides better visibility for the ads, making it a win-win situation for everyone,” he said. A translucent sheet with the ad scrolls down and then is replaced by another sheet. “It’s nice and sharp from any angle,” added Krum.

The lack of sharpness from side angles—and the image burn mentioned by Trans-Lux’s Coyne—are frequently cited as major issues with plasma screens.

Krum has had these scrolling signs installed throughout the entire building, and added that it makes the terminal building much more attractive. “We took down a lot of nice things to make space for this sign,” he said. It’s essentially a turn-key operation; Interspace Airport Advertising handles all the advertising sales and production, and the airport in turn receives 30 percent of the gross revenue generated. These signs have also been used in shopping malls and have been popular in airports in Europe for some time.

A HOLISTIC APPROACH
NEC Unified Solutions, long one of the leaders in visual display technology in the FIDS market, has recently installed LED displays at Denver International, Orlando International and Houston Intecontinental airports. The company takes “a holistic approach” to airport signage, said Russell Young, solutions manager for NEC.

“Airport managers are looking for a total solution approach to messaging,” stated Young, who said that generating advertising revenue is important, as is emergency communications. “Signs give you another medium to speak to people who might have headphones on or may be deaf. Every display in the airport can be focused on emergency communications if the need arises.” Young stressed another important point about emergency communications, which is that, additional funds—other than airport funds—can often be found to install these displays.

He is a big believer in LCD technology. “LCD is really establishing itself as a technology leader in the display market and will be the dominant player for some time.” Young stated. He maintains that LED technology is best for outdoor use because it is fully sunlight readable, whereas LCD works best for inside, smaller venues. NEC measures the lifespan of an LCD display by a half-life of 60,000 hours—meaning that after that period the display will generate half of its original brightness—assuming it is running 24/7. NEC will soon introduce a 57-inch LCD display.

“Plasma is going the way of the dodo,” emphasized Young. “You just can’t get away from the burn factor.”

NEC also now offers touchscreen systems that allow the user to choose whichever language they need, something extremely useful in an international airport environment.

PLASMA CONSENSUS
Adaptive Micro Systems has traditionally constructed dynamic LED signs that are used more for outdoor applications such as roadside and parking areas, but it also makes displays for the ramp, baggage claim areas and flight information. Adaptive has completed recent parking area and TSA directional sign installations at Tampa International,
LED displays at the customs arrival area in Toronto demonstrate GraphixWall technology employed by Trans-Lux.

General Mitchell International in Milwaukee and Piedmont Triad International airport in Greensboro, North Carolina.

“We’re coming out with some modular products soon—second quarter of next year—that are designed more for the indoor market,” said Greg Byzewski, product manager for the company. These screens will also employ LED technology.

Take Byzewski’s comments and those of others and you start to get a consensus on the viability of plasma screens. “Although each technology has its place, a big plasma screen is not designed to run for a long period of time like an LED screen is,” he said. “Also, with plasma the image can be burned in, which won’t continued on pg 28
IGNITES CONFIDENCE.

Fast acceleration. Extreme mobility. Triple agent firepower. The Oshkosh® Striker® ARFF vehicle gives fire fighters on the front line, from small regional feeders to Cat 10 international hubs, everything they need to protect the airports they serve. And respond with force.
As part of a $1.5 billion terminal replacement and enhancement project, Mineta San Jose International Airport will replace all signage within the next four years. The project will target the airport’s new Terminal B, and the Terminal A expansion, along with a new rental car facility, including garages and roadways. As a result, signs as old as 20 years will be replaced, according to Tom Esch, head of the airport’s architectural and mapping section.

The project illustrates the challenges faced by today’s airport managers to make signs more visible and informative, often within an environment dominated by clutter from advertising, graphics and artwork.

“All of the signs must comply with a single master plan. They have to be designed with a consistent look in terms of text, fonts, colors and terminology,” Esch remarked. “This includes universally accepted symbols and colors, factoring in placement, and how the signs interact with other graphic elements as well.”

At Mineta, signage guidelines were developed for specific areas—terminals, curbside and ground transportation areas, as well as parking facilities and roads. Every sign has to meet detailed size, graphic and illumination standards based on their positioning—overhead, wall or floor-mounted.

Other considerations include overall acquisition and life cycle costs. “The signs must be built, maintained and replaced at the lowest possible costs. This is determined through what we call a value engineering process,” said Esch.

According to Esch, the airport is considering the use of LED (light emitting diode) and LCD (liquid crystal display) technology for computer-controlled dynamic signs, which can easily be modified to present different messages, along with emergency communications. This would include multi-user flight data, and baggage information display systems.

“The selections are being driven by cost and message-display objectives,” he explained. “All of the dynamic signs will have information updating capability, through the work of our Airport Technology Services Group. This will be especially important as the airport moves toward a common use environment.”

Dynamic signs also present advertising opportunities, as Esch noted.

“Our policy is that airport-owned units may be used to display advertisements or even artwork when they are not being used to provide information, due to low flight activity periods, for example,” he said. “Still, we realize that the purpose of a dynamic sign is to display specific information for the airport user, and there is a limit to inundating our customers with advertisements.”

Along this line, Esch pointed out that dynamic signs could also be configured to display what is in a specific area, such as a food court or retail shop complex. “We are going to be rebuilding the food court in Terminal A, and we are working with the concessionaires on the signage that will draw people there,” he said. “This is part of a big component with signage: How do we get people to explore what’s in the airport while waiting for a departing or arriving flight?”

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continued from pg 25

happen with LED. We’re seeing a small trend in passengers commenting that plasma screens don’t look that good.”

In sum, planning for new airport signage requires careful consideration of airport interior and exterior design aesthetics, advertising revenue and technology. Signs are something that most people really don’t give much thought to (unless they are lost) but that’s only because of all the careful consideration that goes into them in the first place.
The National Association of State Aviation Officials (NASAO) in early October signed an agreement with the U.S. Department of Agriculture (USDA) that could help general aviation airports counter a growing threat: wildlife and aircraft occupying the same space at the same time on or near an airport.

According to the USDA, there were more than 7,000 wildlife strikes in the U.S. last year, including about 700 strikes at general aviation airports, costing civil and military aviation more than $650 million in damages. What’s worse, Richard A. Dolbeer, the National Coordinator of the USDA’s Airport Safety and Assistance Program, estimates that only 20 percent of strikes are reported. He says the growth in almost all large bird species and deer is related to “highly successful” wildlife conservation programs, and airports often represent a large “green” area in an otherwise developing landscape. “Airports are a natural magnet for wildlife to come to,” he says.

A prime example is the exploding population of non-migratory Canada Geese in the U.S. Dolbeer says the number increased from one million in 1990 to 3.5 million this year. A recent run-in with the large birds occurred Sunday, October 1, when according to Dolbeer, a Gulfstream V collided with 16 Canada Geese just before landing at the Martin State Airport, a GA reliever airport north of Baltimore, destroying one of its two turbofan engines. The aircraft landed safely.

The memorandum of understanding, which mirrors an agreement the USDA’s Animal Services division has had with the Federal Aviation Administration since 1989, aims to give more general aviation airports access to USDA advice, the lead federal program for managing wildlife issues. Last year, 375 Part 139 airports requested assistance, ranging from technical advice to wildlife removal programs, from USDA’s Wildlife Services experts, but only 213 general aviation airports did the same. Part 139 airports in part make contact more often because of the longstanding MOU with the FAA, said USDA biologist Mike Begier. In total, USDA assisted 674 airports last year, up from just 42 in 1990. Wildlife Services also maintains the FAA’s wildlife strike database (http://wildlife-mitigation.tc.faa.gov/public_html/) and writes a yearly report on the results.

Based on legal reviews, Dolbeer said airport operators have to exercise “due diligence in managing wildlife hazards to avoid potentially serious liability issues.” That means making an assessment of the situation and coming up with risk reduction strategies that may include capturing, relocating or destroying the animals, actions that may require federal permits. Wildlife Services has about 300 employees nationwide trained to work with airports in their local areas. The professional biologists take a three-day FAA-approved training course that familiarizes them with working on airports. Their advice could sometimes be as simple as fixing a fence, Dolbeer points out, but it could also be more extensive. In those cases, the airport generally pays for the effort through a cooperative service agreement with the USDA. Either way, initial consultations are free, he adds.

Though the USDA has been developing relationships with state-level aviation departments in recent years, including programs with North Carolina, Oregon, Hawaii and Iowa, other states and individual airports may not be aware of the expertise available, a problem NASAO is aiming to fix with the MOU. “There are many times when airports may be working on these issues,” said Rich Turner, director of the Vermont Bureau of Aviation and past president of NASAO, “and without USDA’s help, they may find that it costs them more time and money down the road.”

Turner, who signed the MOU with USDA in early October, says information will be available either on NASAO’s website, at www.nasao.org, or on the USDA’s wildlife damage website, at www.aphis.usda.gov/subjects/wildlife_damage.
When British authorities foiled the terrorist plot to destroy airliners over the Atlantic in August 2006, an immediate ban was placed on liquid and gel-based products in carry-on baggage. This resulted in a huge spike in checked luggage, causing problems with some baggage handling systems that were not designed to accommodate the extra volume.

The checked-baggage spike was simply an indication of things to come. While the ban on some carry-on items has been eased, there is little doubt that an increased amount of baggage will be stowed in the cargo holds of more airplanes as air travel continues to expand. Although this has the potential to translate into more lost or delayed baggage, fortunately, within the past few years baggage-system vendors have been incorporating technologies that minimize the chances that a checked bag will not be on the same plane as its owner.

What complicates things further is the post-9/11 mandate to implement explosives detection systems (EDS) at all airports on an accelerated basis. “Since 9/11, EDS has been the generator of changes in baggage tracking systems, because you can no longer have conveyor systems that move bags from point A to point B,” said Scott Hyde, deputy manager of planning in the Atlanta office of HNTB Corporation. “With EDS, you have to plan for a system that feeds baggage into a central location for explosives screening, and to continue to track it if it is pulled out for further explosives’ residue inspection.”

Along with more efficient handling of checked baggage, airports are demanding higher-speed systems. Portec is a Canon City, Colorado-based company long known for manufacturing durable conveyor system components, including spiral and flat-belt curves—critical components that permit change of direction along a conveyor system—under the Flomaster brand. According to Michael Anderson, special accounts manager with Portec, high-speed technology represents the wave of the future. “New airport facilities are larger and the baggage must travel longer distances between the terminals and gates,” said Anderson.

In 2006 Portec introduced Flomaster Hyperflo, a higher speed model. Anderson explained that the new belt curve is an answer to customer demand for higher speed combined with less maintenance. “The old Flomaster technology was adequate to move baggage at a rate of 800 feet per minute. Flomaster Hyperflo...
As airports demand higher-speed baggage conveyance systems—and as the TSA demands more security—new baggage handling systems are being tested and installed. The result? Less lost luggage, higher delivery speeds and improved security.

was designed to increase that to 2,000 feet per minute,” he reported. To address maintenance, Portec incorporated an inner air-supported ball-bearing system, which supports the load of the bag and transports it with less friction than that which is generated by a conventional belt system.

Higher speed mandates better flow-through, especially at bottlenecks in baggage handling systems, with EDS emerging as one of the most critical junctions. To address this, Glidepath, a manufacturer and system integrator based in Grand Prairie, Texas, began to develop its GlideSort software product some six years ago. Implemented for the first time at Adelaide Airport in Australia in 2004, it has since been installed at Auckland International Airport and, in the US, at Boise Airport. As John Gude, the company’s director of business development explained, it is possibly the only software package specifically designed for repetitive transactions in the sorting, screening, and reconciliation of outbound baggage, in a cost-effective way.

“GlideSort has been designed to electronically track and provide graphic information on baggage—from check-in through sorting and reconciliation,” Gude said. “It also provides the TSA with a graphics-based, statistical representation of the bag’s security status. When you introduce security screening, such as EDS, this becomes an additional tracking issue. Today, the TSA wants to know where the bag is at all times as it goes through the sorting system.” Of the three installations, Boise was the first one that was a retrofit.

Gude added that the system’s design is being oriented to what Glidepath believes is a future trend in airport design, specifically the common use check-in area. This is being driven by the high cost of EDS and an architectural trend to put EDS in a separate area, away from valuable airport lobby or concourse space. “Passengers will check baggage at one central location rather than at individual airline ticket counters, and the bags will then go through EDS screening as part of the sorting process,” said Gude. Glidepath will allow fewer EDS devices to be used, while increasing throughput levels.”

Gude maintains that EDS is the chokepoint of the system because it can only handle relatively few bags per minute. “If we start seeing more aircraft the size of the new Airbus A380, which will carry upwards of 1,200 pieces of luggage, this could cause a real problem in terms of baggage handling.”

**VISUAL DISPLAYS**

Many new developments in baggage handling are making conventional bar code-based systems more efficient. Lyngsoe Systems is actively marketing its Catellae LIBS (Lyngsoe Integrated Baggage System) to "address the demand to bring greater efficiency to the flow-control process.” As Poulsen noted, the system is designed for small, medium and large airports and was introduced at Stockholm’s Arlanda Airport in early 2006. Lyngsoe Systems provides the information technology software and is the integrator of the software and IT system.

With Catellae LIBS, data is received from the baggage chute-allocation computer and manual encoding stations. The processed data is then graphically displayed on a PC screen, presenting a real-time presentation of baggage-flow conditions. “It shows the process time involved with the flow and spots the location of any bottlenecks. In that way, the operator can spot the location of any problems and address them,” said Poulsen.

He added that Catellae LIBS is specifically designed to address another issue involving many baggage handling systems.

“As the systems have expanded at individual airports, multiple suppliers have been involved, resulting in islands of solutions that won’t work together. With Catellae LIBS, we have been able to combine information from different databases and provide a total baggage-flow-information picture to the airport manager. Lack of a total overview of the various portions of baggage handling systems is a major contributor to lost baggage.”

**KINDER AND GENTLER**

Not every problem with baggage handling requires a high-tech solution. Each year millions of dollars in claims are filed against airlines for damage to luggage and its contents. Siemens Energy and Automation, one
of the world’s largest manufacturers and integrators of baggage handling systems, believes that much of this damage is due to the use of pusher arms, which deploy a great deal of force to divert—or push—baggage from one conveyor belt stream to another. To address this problem, Siemens introduced its High Speed Diverter (HSD) several years ago.

According to Marco Oropeza, manager of marketing and business development for the company’s Airport Logistics Division, the Siemens HSD has been certified by the Transportation Security Administration (TSA) for use in high-speed baggage-screening matrices employed for explosives and weapons detection. Using a single, one-horsepower drive motor, and few moving parts, the HSD is capable of diverting 80 bags per minute. That rate is predicated on bags that are 33 inches long, traveling at 380 feet per minute.

In early October, Siemens introduced an improved HSD, which, according to Oropeza, employs “more robust construction and greater modularity for easier maintenance.” There are 1,200 HSDs now in use at 28 airports, of which 24 are in the US, with the remainder at Montreal, Calgary, Mexico City and Cancun.

Siemens expects to introduce a set of standard HSD configuration solutions by year-end, in order to provide a “more cost effective system for the individual customer.” These new design packages will be developed for implementation in existing as well as new systems provided by Siemens as well as other vendors.

**SECURITY CONCERNS**

FKI Logistex is implementing a Radio Frequency Identification (RFID)-based screening and tracking system for baggage sortation and explosives detection at Las Vegas McCarran International Airport, under an $8 million, first-phase contract. Slated for completion by year-end 2006, it will be the world’s first system to use International Air Transport Association (IATA)-standard 920 Hz passive UHF RFID-embedded luggage tags for automatic identification and tracking of all out-bound baggage in the sortation and explosives detection process.

Also in the process of completing a massive RFID-based baggage handling project is Lyngsoe Systems, of Aars, Denmark. The company describes itself as a “software manufacturer and systems integrators of logistics solutions for monitoring and automating processes in complex logistics chain environments.” The multi-phase program, which commenced at Hong Kong International Airport in September 2004, is scheduled for completion in 2007. According to Jan Poulsen, sales manager for the company, Lyngsoe teamed with Symbol Technology, which is supplying the system’s readers and antennas. Poulsen added that the RFID tags are now being applied only to the bags, but by the end of this year the printouts issued to passengers on check-in will also be embedded with RFID chips containing information matching those on the baggage.

“We believe that RFID is the coming technology for baggage handling and that IATA will mandate, or at least recommend, that all airports implement it within the near future,” said Poulsen.

Lyngsoe Systems has projected that RFID baggage-tracking technology will provide a reduction in lost baggage of as much as a 40 percent, because the technology permits more precise flow and tracking. But the advantages of RFID don’t end with the tracking function. “Because of the restrictions on what can be carried aboard an aircraft, more baggage is being checked and we are running into a capacity problem,” Poulsen noted. “Because RFID is providing a more efficient IT solution, and greater automation to the tracking of bags, it will add capacity without having to increase the mechanical system.”

For all its promise, RFID has not been adapted on a wide-scale basis due to cost, according to HNTB’s Hyde. “Bar code is still the standard, although its effectiveness often comes down to printer maintenance and readability,” he said. “A bar code tag is less than six cents, but an RFID tag runs about 18 cents. And, there’s a lot of debate about how much information should be included on the RFID chip and that adds to cost. It’s a lot less expensive to put in the scanning arrays.”

But Hyde added that as the retail sector pushes for greater use of RFID, it is likely to drive the costs down and airlines may more readily embrace the
technology. “We are getting closer to the day when the airlines will use RFID because it’s a much more reliable way of screening bags.”

UNPROVEN TECHNOLOGY

In spite of the enhanced capabilities of new high-technology baggage handling systems that are compatible with baggage handling and explosive detection systems, the practical solution for baggage sorting—right now. He pointed out that Denver’s system, which has been on stream since December 2005, employs optical barcode readers but is readily convertible to RFID, should the airport adopt that technology.

“RFID is currently more compatible with a tray system because you only need to apply the chips to the tray one time, and the tray—which contains the baggage—stays within the airport system,” Frenz explained. “It’s still too costly to apply RFID chips to individual bags.”

Still, the potential benefits of RFID application to baggage handling are undisputable. Patrick Marino, project manager-special systems for Cincinnati-based PB Aviation, predicted that RFID will greatly reduce baggage loss and its associated costs. Nonetheless, he agrees that there is a need for the technology to be proven within the baggage handling context, “in order to minimize risk and show that it is a cost effective solution.”

Marino, who is involved with the new baggage system installation under San Jose’s Norman Mineta International Airport’s Terminal Area Improvement Program, added that while RFID has been used effectively in materials handling, that’s no guarantee it can be seamlessly transitioned to baggage handling. “Applying RFID to baggage handling at an airport is a different application from other industries, although the technology is promising.”

This raises a parallel issue, specifically, the implementation of inline baggage systems, for which the new technology is considered integral.

Inline systems are being designed to permit explosives detection and screening on a centralized basis. The problem is cost.

“The money to do this is woefully inadequate right now,” said Larry Krauter at Lehigh Valley International Airport. “It’s a very expensive process and a lot of airports don’t have the money or the capacity to float a lot of debt to be able to do this.”

Krauter explained that at Lehigh Valley International Airport, going to an inline system would mandate a terminal expansion and reconfiguration. “That has made us very circumspect with regard to investing in an inline system,” he said.

Oakland International Airport’s Grossman stated that, if an inline baggage handling and explosive detection system were to be installed in every airport, the cost would be over $3.4 billion. “There is no federal funding to do this at all airports,” he said.

In the summer of 2005, the airport implemented an inline baggage-screening section at its Terminal Two, which is used exclusively by Southwest Airlines. “Since they are the only airline using that terminal, it was a very clean kind of an installation and operation,” Grossman explained. “But for Terminal One, where we have 10 to 12 carriers, we determined that a non-inline solution was the best way to go. When you start commingling a lot of bags for different destinations—on different airlines—an inline system can be very complicated and more expensive to implement and operate.”

Still, PB Aviation’s Marino argues that the industry will eventually move toward inline systems, especially as more airports assume the baggage handling function from individual air carriers. “If the designs can give the central systems flexibility, it will result in reduced costs for baggage handling. In fact, with today’s technology we can build inline systems that are compatible with baggage handled for multiple airlines and destinations.”
ineta San José International Airport, as part of its $1.5 billion Terminal Area Improvement Program, will more than double retail, food and beverage square footage for a total of 34,000 square feet of concessions space before and after security checkpoints in the new Terminal B and its North Concourse and in remodeled Terminal A.

The airport is in negotiations with a firm that will handle design and construction of the terminal area improvements.

Concessions currently are located pre-security and post-security in Terminal C and post-security in Terminal A. Current plans call for maximizing services in the areas where passenger impact will be the greatest, according to airport spokesperson Rich Dressler.

“Studies have shown us that passengers want to clear the security checkpoints and find their gates before taking the opportunity to shop and to dine at the airport. Some basic amenities will be available pre-security and will be identified by the hired consultants after their studies have been completed,” said Dressler.

Airport officials plan to incorporate a local look and feel to the new concessions, and have hired consultants from the Center for Airport Management to make recommendations for design and concepts for each location. After location and types of concessions have been identified, the airport will issue a request for proposals to select vendors, expected to be issued in Spring 2007.

Meanwhile, to promote greater use of existing concessions, the airport has unveiled an extensive “Get it at the Airport” marketing campaign aimed at drawing travelers’ attention to the choices for food and retail items available at the airport. Colorful banners and signs with catchy headlines like “Better refuel before you fly” and “Next Food: 1,500 Miles” have been strategically placed around the terminals, touting the variety of shopping opportunities, and encouraging travelers to try them. Campaign brochures provide a map to all locations in the airport.

The campaign is a partnership between the airport and its primary concessionaires, HMSHost and DFS North America, which contributed funds to support the campaign.
Hudson Group and its partners have been selected to upgrade the news/gift and specialty retail concession program at Nashville International Airport. The authority Sept. 20 awarded a 10-year contract for all available retail space to Hudson and its partners—J&B Enterprises, CBR Inc. and Olympic Supply Inc. Joseph DiDomizio, executive vice president and chief operating officer, Hudson Group, said, “We are delighted to be coming to Nashville. This is a new market for us, which we expect will generate additional revenues of some $200 million over the life of the contract.”...HMSHost Corp. recently extended its contract to develop new dining options at Southwest Florida International. The contract, which extends through 2018, generates $20 million in annual sales and expands HMSHost’s presence in the state of Florida. HMSHost in 2006 will invest $1.7 million in expanding its existing retail, food and beverage concessions programs at Southwest Florida International. New food and beverage options at the airport will include a Quiznos, Nathan’s Famous and Great American Bagel... The Airport Minority Advisory Council (AMAC) has named the Wayne County Airport Authority as the winner of AMAC’s 2006 Airport Concessions Award for meeting or exceeding its Disadvantaged Business Enterprise (DBE) program goal for at least two years at Detroit Metropolitan Wayne County Airport (DTW). In fiscal year 2004, the airport authority achieved its goal of 19 percent of concession revenues (including car rentals) by DBE companies ($52.3 million). In fiscal year 2005, the authority more than doubled its goal of 20 percent when the DBE companies reached 41 percent of concession revenues (excluding car rentals) or $61.9 million....BAA USA has introduced a new publication with information on Airmall shopping at Baltimore/Washington International Thurgood Marshall Airport, Boston Logan International and Pittsburgh International. Dubbed Runway Magazine, the publication is a tabloid newspaper with quick-read details on Airmall offerings at the three airports.
With all the years of experience that airports have in baggage handling, the complexity of the process is still surprising. Compared with industrial manufacturing, the limited degree to which the end of the line has been mechanized is remarkable. The sensitivities of the product and the tight time schedules in the process play a part in this. When the global character of aviation and the many parties involved are added, the complexity of baggage handling becomes clear.

For the average passenger, the visibility of the baggage system is limited. On the input side, it is the check-in counter where the suitcase is handed in before departure. On the output side, where the baggage is collected again, only the reclaim carousel or belt is visible to the public. The most complex part takes place behind closed doors.

In the loading and unloading of an aircraft there are important differences in the way baggage is transported: loose, usually employed for narrowbody aircraft, and unit load devices (ULDs), which are used for widebody aircraft.

When unloading an aircraft, loose baggage is put on ramp carts by hand, driven to the load unit (LU) unloading position and then put on a conveyor belt by hand. This belt goes directly to the reclaim area, where the passenger picks up the baggage. For passengers transferring to another flight, the baggage is unloaded onto another belt and goes through the sorting process on its way to another aircraft. The ULDs are mechanically transferred to dollies with high-loaders and subsequently driven to the LU unloading position, where the baggage is taken out of the ULD by hand and entered into the sorting process.

When loading an aircraft, the opposite takes place. Baggage from the sorting process is loaded into a ULD or onto a ramp cart and then driven to the aircraft. Here the ULD or baggage is loaded onto the aircraft, for which human hands still are needed in the case of loose baggage.

This operation is functional and used all over the world. Nevertheless, it still has a vulnerable link: the input and output points of the sorting process (LU loading and unloading). These steps have remained unchanged for decades and are carried out by hand. The physical burden for employees is considerable. The lifting index, measured according to the National Institute for Occupational Safety and Health (NIOSH) method, results in a value more than twice the level allowed for both loading and unloading in the sorting process. Suitcases with large, unknown weight variations are disastrous for the back and arms.

There are other reasons for process improvements. Safety regulations are
KLM and Schiphol Airport have implemented a pilot robotic baggage loading and unloading system that both lightens the load for employees and automates the baggage-handling process.

becoming stricter all the time. With fewer hands on the suitcases, the process becomes more orderly and easier to control. The continuity and speed of baggage handling is an important benchmark of the quality and therefore the assessment of an airport. Finally, cost control and efficient use of space are important issues for any airport.

Sorting Solutions
Amsterdam’s Schiphol Airport and KLM started a pilot project for mechanized baggage unloading earlier this year. Looking at the first flow chart, the first point can be scored at the unloading of the ramp cart and ULD. Mechanization of this part of the process is a blessing for baggage-handling employees. A basic solution for mechanized unloading is based on the principle of emptying the container or trolley in layers by tilting it. Grenzebach Onero, the manufacturer of the loading units and the robots used to unload the baggage, has translated this principle into a prototype able to unload ramp carts. Moderniek is building a prototype for both carts and containers. The operator’s job is
limited to a controlling task—correcting baggage separation and removing stuck pieces when necessary. Odd-sized baggage will be removed manually.

The output side of the sorting process consists of carousels, laterals or chutes from which operators load the baggage onto ramp carts or containers. Schiphol Airport, Tebodin Engineers and Grenzebach Onerco cooperatively looked for a solution involving a robot. Several concepts were reviewed. Different kinds of grippers and image-recognition software have been developed, with reliability, filling ability and load capacity as the main criteria. After several prototypes and six months of testing, KLM decided to integrate a pilot installation in the Schiphol handling process. Both Schiphol and KLM report positive results to such an extent that large-scale implementation is now considered feasible.

**Simulations and Robots**

Stand-alone tests can have excellent results, but the success of a solution is determined by the effectiveness within the process as a whole. A “plug and play” solution does not work with this kind of innovative solution. Fine-tuning of the loading units, the buffer size for baggage and loading units, which baggage goes and which does not go in the early baggage storage—all these issues are related to controls. The physical realization also raises a number of questions and issues to solve.

**LU Unloading:**

- Difference between ramp carts and ULDs on dollies;
- Working with individual units instead of trains of carts or dollies;
- Mixing of normal and odd-sized baggage;
- Fitting into existing situation;
- Handling of individual empty carts and ULDs.

**LU Loading:**

- How to make automatic loading economically feasible;
- Loading per subsortation, flight, several flights;
- Loading from early baggage storage or on supply basis;
- Does the right LU arrive at the right time at the right robot;
- Which filling degree is necessary.

Answering these questions and integrating mechanized loading and unloading into the baggage-handling process demands a careful approach and thorough knowledge of process and product. To help with this aspect of the project, KLM created “load files”—computer simulations based on the number of bags processed, arrival and departure times, sortation criteria, etc.

“To determine whether we could deploy the robots to a sufficient
degree, we simulated different loads,” said KLM Project Manager Ad Kokshoorn. “We started with a simple model, which later became more and more refined. When it became clear that mechanization was feasible, we started organizing the process on which the pilot was based.”

At airports, systems are changed or expanded in existing processes. To achieve a useful application of new systems in both loading and unloading, a closer look at the process was needed. Apart from the material flow, process management and planning also need careful consideration.

“Together with KLM and Tebodin we have developed an innovative baggage handling area in which these new elements have been integrated,” said Schiphol research and development consultant Mark Hullegie.

“With a diagrammatic approach we came up with an outline of all the system parts, which was used to draft the set of requirements.”

**Flow Charts**

The first step in planning the new system is to develop a flowchart, where all interrelations and the position of the new units become clearly visible. In the case of Schiphol, KLM, based on the flowchart, decided to integrate the new baggage claim system into the latest airport expansion.

A feasibility check is the last step toward formulating requirements. The spots have to be made concrete by filling them in with mechanical components. This is then incorporated in a layout sketch, which can be used as an example for the final plan.

While making the draft and the layout, the linking elements’ influence will prove to be substantial and omissions can appear. A careful analysis is needed, not only of the baggage flows, but also of the LU flows. The empty loading units have to be transported and stored, and the right unit has to end up at the right loading point at the right time. A combination of carts with their own specific undercarriages and ULDs with dollies makes it complex. KLM searched for a uniform solution and found it in a Standard Loading Unit, which can be transported on a dolly just like a ULD.

In the years to come, Schiphol will adapt the process and systems in several baggage-handling areas to prepare for mechanization. Robots will be used for the newest south baggage-handling area at Schiphol. Where technology is not yet sufficiently crystallized, space has been allotted in the basic design of additional baggage-handling areas.

Each process has its own characteristics. Depending on these characteristics, a tailor-made solution can be developed for every situation, which contributes to process improvement. This course can be lengthy and complex. Schiphol Airport, KLM and Tebodin together have developed and realized a new and innovative baggage-handling concept, with which Schiphol has increased its efficiency.

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Henk Brandsma is a senior consultant with Tebodin Consultants & Engineers.
Huntsville International Airport is undergoing an $87 million improvement program to meet expected traffic growth over the next 10 years. The airport is operated by the Port of Huntsville, which includes more than 6,000 acres and is comprised of the airport, the International Intermodal Center and the Jetplex Industrial Park.

Among improvements under construction or in the design stage at Huntsville International are a new air traffic control tower, a passenger screening and public waiting area expansion, a concessions area expansion, a new parking deck addition and a flight information systems upgrade. All projects are expected to be completed in 2008.

The $23.2 million air traffic control tower, which is currently under construction, will be 219 feet high compared with 96 feet for the existing control tower.

Fun Facts

- Huntsville International has two parallel runways, one 10,000 feet and one 12,600 feet, with a 5,000-foot separation, allowing for simultaneous operations during instrument conditions. The facility is equipped for Category I operations.
- Huntsville International is home to the second longest runway in the southeast United States.
- Huntsville International offers a free fare-finding service at www.HuntsvilleHotTicket.com. The service has 28,000 members and also provides special deals by email.
- Huntsville International is home to the Sheraton Four Points Hotel, with 146 guest rooms and more than 6,000 square feet of meeting space.
- The Port of Huntsville’s International Intermodal Center is a U.S. Customs Port of Entry that provides a single-hub location for receiving, transferring, storing and distributing international and domestic cargo via air, rail and highway.
- Jetplex Industrial Park features direct runway access, a Foreign-Trade Zone, U.S. Customs officials and brokers on site and lots from four acres to 375 acres.
Airport officials said the tower has been strategically located on the airfield for maximum growth potential and is 100 percent federally funded.

The passenger screening and public waiting area project will add 20,000 square feet to these areas, along with 200 additional seats for public waiting, a new public observation area, new restrooms with a family restroom and upgraded flight information display systems, among other features.

The food and beverage concession expansion will add 5,000 square feet of concessions on the concourse and in the terminal building, in addition to “grab and go” concessions at the security screening and public waiting areas.

The $17.96 million parking deck addition, currently in the design phase, will provide an additional 1,330 covered parking spaces, new exit toll plazas, more covered parking for rental cars, and enhanced traffic flow circulation.

The flight information display system (FIDS) upgrade was completed in September 2006 at a cost of $863,000. The new FIDS provides real-time FAA flight information on modern flat-screen displays at terminal front parking, where none previously existed, and throughout the terminal and concourse.
Unbeknownst to the general population, the Airbus A380 super jumbo is already running scheduled service to U.S. airports. No one has seen it because the arrivals, departures and taxiing have been taking place within a computer simulation lab at the Federal Aviation Administration’s William J. Hughes Technical Center, adjacent to the Atlantic City (New Jersey) International Airport.

The results of the virtual tests are real, however, and are helping airports and regulators come to grips with airspace and airport infrastructure impacts that could arise when the 1.2-million-pound gross weight, 555-passenger double-deckers begin serving a handful of major U.S. airports in 2007 or 2008.

Hot at the moment are estimates for arrival delays at airports with A380 service, following the November 2005 decree by the International Civil Aviation Organization (ICAO) that aircraft following an A380 on arrival maintain significantly larger separation than what is required by today’s standards. Though airliners can typically fly as close as four nautical miles from each other on approach, regulators wanted increased spacing for the A380, at least initially, due to
the potential effects of wake turbulence from the new aircraft.

“The basic question is, ‘Can the airport function?’” said Joseph Richie, a senior mathematician in the Tech Center’s Capacity Modeling and Analysis Group (CMAG). Richie was one of the primary users of a family of computer simulation programs FAA first developed in the 1970s and has used in recent years to investigate the potential impact of unusually large aircraft on terminal-area airspace and airport operations, arrival and departure delays and traffic flow rates. The heavyweights, also known as New Large Aircraft (NLA), include aircraft like the A380, AN-124, AN-225 and the U.S. military’s C-5 Galaxy.

The Tech Center’s primary tool for assessing A380 delays is the Airfield Delay Simulation Model (ADSIM), a program that predicts hourly or daily delays experienced by aircraft, as well as travel times from gate to runway and vice versa for a specified airport, among other information. ADSIM also generates output FAA can then transform into 24-hour fast-time animation files, accurate enough that some airports are planning to use them for training purposes. The animations include symbology for different aircraft sizes, and show the movement of all aircraft to and from the gates of interest.

CMAG has been using a related simulation model since 1999 to compute annual service volume (ASV) studies for regulators and lawmakers to evaluate the need for new runways or other infrastructure. The group has delivered 112 of the studies, which estimate an airport’s capacity and delay per aircraft, said Jennifer Morris, acting manager of CMAG. Her group is composed of 13 federal employees, a blend of operations research analysts, computer specialists and mathematicians.

Along with A380 studies, airports also request CMAG’s help to run what-if scenarios for future projects and to investigate the effects of infrastructure changes on operations. CMAG recently completed de-icing area scenarios for Denver International Airport and is performing tradeoff analyses on a possible seventh runway. Also underway is a study for Anchorage International Airport to look at the impact of operating the A380.

TEST CASE AT MEMPHIS
CMAG’s launch customer for NLA studies was Memphis International Airport, in 2001. For Memphis, the NLA of concern at the time was the C-5 Galaxy; the Tennessee Air National Guard unit at the airport was planning to relocate its facilities on the airport and replace its C-141s with C-5s. (The military retired the C-141 from service earlier this year). In 2002, the airport asked for an evaluation of the A380 as well because FedEx had just placed orders for 10 cargo versions of the jumbo. FedEx has its main U.S. operations hub in Memphis.

To customize ADSIM for Memphis or any other airport, CMAG analysts spend as many as three months gathering materials and working with the airport and air traffic controllers to characterize the airport and a typical day of airport demand. Data include the types of aircraft that use the airport in the present and the projected fleet mix for the future, the current and projected number and types of daily operations, airport layout—including gates—and preferred runways and routing for aircraft on the ground or in the air, starting 20 miles from the airport. Analysts also work with airports and air traffic controllers to determine the likely approach and departure paths those aircraft would take and what percentage might be operating by visual or instrument flight rules.

Computer simulations developed for the Airbus A380 at the FAA Technical Center will help airports deal with the increased weight load and longer in-trail spacing mandated by ICAO.
Coming up with how the airport will look on a typical day in the future is no small task. According to Morris, the group begins with a typical day for the current demand, usually selecting an average day in the peak month of the year. CMAG determines the baseline demand using the Official Airline Guide plus various FAA sources to capture unscheduled, military and general aviation operations. The design team then agrees on the future demands based on the FAA’s Terminal Area Forecast, master plan, previous studies or other relevant sources. Analysts then increase the traffic based on the characteristics and fleet mix of the forecast demand.

Once the input data is finalized, the group runs a variety of simulations, generating delay computations for a typical day, including arrival, departure, taxi-in, taxi-out, total daily and total yearly delays, with and without NLAs in the mix.

For Memphis, CMAG completed simulations for 2001 (the baseline), 2005 (with two C-5 arrivals and departures per day), and for 2010 (two C-5 and two A380 arrivals and departures a day). The results, according to Richie, showed that Memphis would be able to handle the NLA “without any difficulties” through 2010. CMAG has not yet been tasked to evaluate the more conservative approach spacing criteria for the A380, though the airport has requested that the study be repeated.

**SFO SIMULATIONS**

Another facility that will see a modest but steady increase in A380 service in the near future is San Francisco International Airport. CMAG began modeling the situation in February 2004, using ADSIM to analyze possible delays in airport operations through 2025, assuming there will be two arrivals and two departures out of a total of 1,010 daily operations in 2006 (the study was completed before the most recent A380 delivery delays were announced); five arrivals and four departures out of 1,134 operations in 2015, and eight arrivals and eight departures out of 1,293 operations in 2025. Since the analysis was completed before the ICAO in-trail separation decision, CMAG simulated a minimum aircraft separation of four nautical miles, a figure provided by air traffic controllers.

The study, completed last September, showed that the A380 would have no “negative impact” on the operations of the airport for the forecast period for any of the runway alternatives considered. “The differences between the baseline cases and the NLA cases are so small that it is considered to be statistically insignificant,” wrote Richie and co-workers, Babulal Shah and Robert Holladay. In fact, the total delay time with A380s in service is slightly less than the alternative (see figure 1). Like Memphis, SFO wants to re-run the model with the ICAO spacing, in addition to looking at the effects of a high-speed turn-off option.

**JFK SPACING SCENARIOS**

Though somewhat counterintuitive, increasing in-trail spacing, at least in one case, had a limited impact on performance. For a study of John F. Kennedy International Airport, CMAG simulated A380 impacts with and without the added spacing. As the work had started before the ICAO decree, the group first simulated airport operations with the same standard separation criteria it used for San Francisco: four-nautical-mile spacing between an A380 in the lead and a heavy aircraft like the Boeing 747, Boeing 777 and A340 behind, five nautical miles for an aircraft like the Boeing 757 and other large aircraft like the A320 and Boeing 737, and six nautical miles for anything smaller. The study assumed two daily A380 arrivals and two departures in 2006 or 2007, nine in 2015 and 16 in 2025. Results were similar to San Francisco, in that differences in total delays were statistically insignificant with and without the A380. The simulations assume the NLA flies at an approach speed of 145 kts.

Following the ICAO directive, CMAG updated the simulation with the new parameters: 6.5 nautical miles spacing for heavies, 9 nautical miles for the B757 and large aircraft and 10 nautical miles for all others. The difference in results was noticeable but not striking: 1.8 percent more total delays for 2006; 2.99 percent more for 2015 and 5.67 percent more in 2025 (see figure 2).
Gordon Hayhoe’s playground is a 1,200-foot-long metal warehouse with no environmental controls. Though somewhat uncomfortable in the sweltering summer heat, the lack of creature comforts is perfectly suitable for a facility that tests how aircraft wheels treat the outdoor surfaces on which they roll.

Though the FAA’s computer simulations for airport delays have so far revealed a minor impact from A380 operations in the near term, Hayhoe, manager of the FAA’s National Airport Pavement Test Facility, and his team are working to ensure the same will be true for asphalt and concrete taxiways and parking areas, as aircraft like the A380—those with wheel loads in the 60,000-plus-pound zone—become a more common sight at airports.

In tests starting next spring, Hayhoe and his team plan to taxi a triple-tandem gear alongside a dual-tandem gear—similar in configuration to one half of the A380’s main landing gear—attached to the facility’s 70-foot-wide gantry. The gantry will move forward and backward at three miles per hour over a 60-by-120-foot-long test pavement for eight to 12 hours each workday, pressing down each of the 10 wheels with 60,000 pounds of force (about the weight that each of the A380’s 20 main wheels will support at gross weight) until the asphalt fails. Failure will be indicated by upheaval of the material outside the tire tracks. Airbus previously had run similar taxiing tests of an A380 landing gear configuration, but had stopped before the pavement reached full structural failure.

FAA’s test is not designed to flush out potential faults with the A380, but rather to better characterize how flexible surfaces respond to the new generation of aircraft with the highest wheel loads ever seen in commercial aviation. Top contenders for the wheel-loading crown include the A380, the Boeing 777-300ER and the Airbus A340-600HGW, all of which weigh in at more than 775,000 pounds at maximum takeoff weight (see table). FAA assumes that the main gear handles about 95 percent of the weight of the aircraft, though the numbers vary, according to Hayhoe.

As for the effects of the massive aircraft on pavement, it’s not as simple as dividing the weight by the number of wheels. There are interactions between the wheels and differences due to the geometry of the gear; four-wheel versus six-wheel gears, for example. While experts agree FAA’s guidelines are conservative in terms of how thick a layer of asphalt should be, no one knows how much conservatism is built in to the numbers. For example, the current FAA guidelines for pavement strength could limit an aircraft with 20 wheels—like the A380—to a maximum takeoff weight of less than one million pounds when operating on an existing pavement.

The result of an overly conservative model is unnecessary paving costs. “The failure mode for flexible pavement is very poorly understood,” said Hayhoe. As a result, design guidelines use a “conservative factor of safety,” he said, which can result in more costs when building a runway or applying an overlay.

The test next year will be the first to run until the pavement breaks under multiple-gear loading, a condition that will yield more information, helping better correlate modeled results with reality. “We take it all the way,” Hayhoe said.

### Rolling A380 Thunder

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As for the effects of the massive aircraft on pavement, it’s not as simple as dividing the weight by the number of wheels. There are interactions between the wheels and differences due to the geometry of the gear; four-wheel versus six-wheel gears, for example. While experts agree FAA’s guidelines are conservative in terms of how thick a layer of asphalt should be, no one knows how much conservatism is built in to the numbers. For example, the current FAA guidelines for pavement strength could limit an aircraft with 20 wheels—like the A380—to a maximum takeoff weight of less than one million pounds when operating on an existing pavement.

The result of an overly conservative model is unnecessary paving costs. “The failure mode for flexible pavement is very poorly understood,” said Hayhoe. As a result, design guidelines use a “conservative factor of safety,” he said, which can result in more costs when building a runway or applying an overlay.

The test next year will be the first to run until the pavement breaks under multiple-gear loading, a condition that will yield more information, helping better correlate modeled results with reality. “We take it all the way,” Hayhoe said.
Wireless Video System Monitors And Tracks Aircraft Movements

One of the issues airports have to deal with on a daily basis is keeping track of inbound traffic. This is especially true for smaller, general aviation airports that may not have the sophisticated means or the round-the-clock staff to track every aircraft movement. Establishing an accurate log of the number of aircraft arrivals each day is essential in applying for federal and state funding, levying landing fees, enforcing noise abatement procedures, and now in many cases for security reasons. According to some estimates, 10 to 15 percent of all aircraft that land daily at airports are not accounted for.

Enter TTI Wireless, a company founded by Dale Albright and his father, Tom Albright shortly after 9/11. Dale Albright, who has a degree in applied physics and applied mathematics and has served in a management capacity with several telecommunications companies, serves as vice president and chief technology officer of the firm. Determining the need for a security system that would log and track the N numbers of landing aircraft, the two partners researched and recently launched WASP—Wireless Access Surveillance Platform, which they claim is the first and only system of its kind.

By installing a network of wireless, digital cameras along the taxiway and runway connectors, the airport is able to establish real-time visual documentation of all incoming—and outgoing—traffic. The cameras feed to a local computer server that functions as a Network Video Recorder (NVR) and stores all the images. The images, which are filtered and time-stamped, are then transmitted to a central WASP database, where they are matched against the FAA global database of N-registered aircraft, which indicates the aircraft owner of record based on tax filing information. The tail numbers also are scanned to see if they are on the FAA or TSA security watch list. Night-time surveillance is not an issue because the system incorporates an infrared nighttime illuminator. With the WASP system, an additional layer of airport security is an attractive added benefit in the post-9/11 airport operating environment.

“The WASP system is especially useful to county and municipal airports lacking control tower or instrument approach equipment, because all the fencing, lighting and fixed cameras in the world can’t stop aircraft from arriving and departing unannounced, unrecognized and even unseen,” said Dale Albright. “The WASP system will record every arrival and departure every time.”

In addition to the direct link to the FAA database, TTI offers a subscription-based service that can determine the actual identity of the operator, location, type of aircraft and landing frequency, indicating which landing aircraft are base customers and which are transient—an essential component of any airport’s (or FBO’s) billing systems.

“In many cases, an airport can pay for the WASP system in less than two years simply by eliminating missed revenues,” added Albright.

The wireless system can also be used to monitor ramp areas, hangars, gates, airport buildings and fuel farms.

The hardware consists of the wireless, digital fixed camera units, infrared nighttime illuminator, wireless advanced optic digital pan-tilt zoom remotely controlled cameras used to scan ramp and other areas, and the local computer server that functions as an NVR and stores the filtered images of detected events. The installation complies with FAA Part 139 airport operating standards.

TTI Wireless claims that its Wireless Access Surveillance Platform, or WASP, which logs and tracks the N numbers of landing aircraft, is the first and only security system of its kind.

In the case of Franklin County Airport, the WASP system is being used to document aircraft movements in support of a state-funded runway extension from 5,500 to 6,500 feet.

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Michael J. Smith Field, located
directly next to an historic, seaside village, has strict noise abatement procedures. The WASP system was used at Smith Field as a bargaining chip by airport management in order to gain approval for a runway extension. With the aircraft monitoring system in place, the airport now has a reliable method of tracking any aircraft that violate the stringent noise restrictions. Albright said that TTI plans to install WASP systems at additional airports in the near future. The cost to install the WASP system is between $50,000 and $100,000, depending on the number of cameras and the size of the airport.

For more information, access www.ttiwireless.com.

TTI’s WASP system is especially useful to county and municipal airports lacking control tower or instrument approach equipment.
The Kansas City Aviation Department has selected Trammell Crow Co. as master developer for the KCI Business Airpark, located on the southeast corner of the airfield at Kansas City International.

The Columbus Regional Airport Authority Board of Directors has approved a resolution awarding a $30 million contract to Nickolas Savko & Sons for construction of Norfolk Southern’s intermodal terminal at Rickenbacker International Airport.

Siemens was awarded a $19.1 million design and build contract from Walbridge/Barton Malow LLC for an inline baggage handling system as part of the new Detroit Metro North Terminal redevelopment project. The project includes the demolition of the old Davey Terminal and the construction of a new, two-level terminal with 26 gates.

The Los Angeles Board of Airport Commissioners awarded a $575 million contract to Clark/McCarthy, a joint venture company based in Costa Mesa, California, for major interior renovations at the Tom Bradley International Terminal at Los Angeles International Airport. The project includes installation of an in-line, checked baggage security system and a boarding gate for new large aircraft.

The team of Balfour Beatty and Mitsui & Co. has been selected to bid on the contract for the Oakland Airport Connector, a proposed automated people mover system that will bring airline passengers directly into Oakland International.

Delta Air Lines has begun the second phase of construction on its lobby at Hartsfield-Jackson Atlanta International, which includes $14 million of improvements scheduled to be completed by summer 2007.

The Tucson Airport Authority has awarded four contracts intended to replace the existing lighting system for Runway 11R at Tucson International; to upgrade the runway lighting system at Ryan Airfield; to replace all taxiway light fixtures at Tucson International, and to replace two regenerative air pavement sweepers at Tucson International.
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