IN MOTION

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SFO AirTrain System Expansion

San Francisco International Airport's AirTrain system
Image courtesy of Bombardier Transportation

After 12 years of operation, the AirTrain Automated People Mover (APM) system at San Francisco International Airport (SFO) is undergoing a number of changes in conjunction with SFO's capital and long-range planning efforts. These changes include extending the alignment almost a half mile to Lot DD to serve existing and planned landside facilities, and potentially adding a station onto the existing route to serve a new hotel. In addition to these changes, there is a potential need for expanding the ultimate train lengths from 3 to 4 cars to serve growing passenger demand. As the primary conveyance system for passenger circulation between landside facilities and functions at SFO, the AirTrain system will need to accommodate the demand increases anticipated. The SFO AirTrain includes 2.8 miles of dual-lane guideway and nine stations.

Over the last year Lea+Elliott has supported SFO on the LeighFisher team reviewing the AirTrain system with regard to the implementation of the various programs affecting change on the system to determine the best path forward. Extensive operational analyses were conducted, including updating the vehicle capacity based on current rider characteristics, along with review of the feasibility and potential impacts of such a significant change on the existing AirTrain facilities.

Lea+Elliott participated in and supported the development of Lot DD site concepts to ensure there is a feasible APM system solution for the site, which includes multiple landside facilities, including two long-term parking garages and an AirTrain station. Lea+Elliott led the development of initial station and vertical circulation concepts and the AirTrain system alignment extension into Lot DD from the current end of line. In addition, Lea+Elliott developed conceptual alignment extension alternatives beyond Lot DD

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highlighting potential impacts to the other existing and planned facilities.

Lea+Elliott reviewed the capacity constraints at each of the existing AirTrain stations in meeting the demands for the expanded AirTrain system and developed plans and alternatives for the potential expansion of each station to meet future demand. The station expansion plans were developed with regard to the analysis of three primary station and platform elements: vehicle berthing positions, vertical circulation elements, and overall platform circulation.

The maintenance facility review focused on the existing light and heavy maintenance bays and if they could accommodate the maintenance regime for an increased fleet size and train length. In addition, the current train storage strategy was reviewed to discern the changes/additions needed to meet the updated storage needs.

Along with the modifications to the maintenance, storage and station facilities, increasing the train consist requires modification of various AirTrain system elements/operations. Lea+Elliott outlined these elements/operations modifications/ upgrades that might be needed, including guideway structure, power distribution system, automatic train control System, central control, and vehicle structure.

Over the last two decades, Lea+Elliott has had the privilege of working with SFO on the AirTrain system. Lea+Elliott's relationship with SFO began in the 1990s with planning services to determine the feasibility of installing an APM system at SFO and resulted in supporting the procurement and implementation of the AirTrain System, which opened for passenger service in 2003.

INTERNATIONAL CONFERENCE ON AUTOMATED PEOPLE MOVERS AND AUTOMATED TRANSIT SYSTEMS

TORONTO, CANADA | APRIL 17-20, 2016

The 15th International Conference on Automated People Movers and Automated Transit Systems will be held this year in Toronto April 17-20.

Themed *Automated People Movers and Automated Transit Systems - Innovation in a Rapidly Urbanizing World*, this year's conference will explore the role of innovative applications of APM and ATS. How will these systems evolve? And how might PRT, autonomous road vehicles, and other new technologies contribute to the efficient movement of people? How might these systems work together synergistically with current and future physical infrastructure?

For registration and additional information, visit www.apmconference.org. See you there!

President's Column

Resolutions: Can they really work?

Every January, it's always the same, old story at my house—I vow to lose weight, work out more often, and make healthy food choices. My wife smiles knowingly and supports my convictions, all the while knowing that, in the next few months, my resolve will weaken and I'll go back to my old ways.

This year, I am trying a different approach. Instead of focusing on positive resolutions for my personal life, I choose to think about Lea+Elliott and to concentrate on resolutions that will help me become a better leader for those who work with me. So, I am stating here and now—in front of you and all our clients and employees—I am determined to meet these goals in 2016.

1. I will listen more to employee/client input. With busy schedules, we tend to multi-task, become distracted, and let our personal biases influence how well we listen. This year, I will focus more when others are talking and make a greater effort to understand and be understood.
2. I will find ways to improve training for our staff. Most firms invest in employee training; but do they do it to reach a human resource goal? Do they offer the training that truly helps employees improve? This year, we will look for ways to find specific training to help employees reach new levels—whether that means shadowing an expert in driverless transit systems or taking advanced engineering courses or discovering a hidden talent. Training shouldn't be cookie-cutter; it should meet the need of each specific individual.
3. I will focus more on strategic planning. We all get wrapped up in the day-to-day, it's natural. Instead of just focusing on getting the work out the door, I am determined to look at long-term ideas, to think strategically, to consider out-of-the-box ideas. Looking at a bigger picture—through a wider lens—is sure to help us chart a stronger course for Lea+Elliott 's future.
4. I will promote the L+E culture with staff and clients. We have a very unique culture here. It is warm and inclusive and respectful. Loyalty and longevity just seem to live within our corporate ethos. People who work here like it here. People who work with us like us. Something is just comfortable and right. That's a very important part of our business and it's been that way since the beginning, over 40 years ago. These are attributes we need to celebrate, not take them for granted. We are fortunate to have such a unique environment.

So, there you have it. Feel free to keep me accountable and we'll see if these resolutions last the test of time!

Jack Norton

IN PROGRESS

APM Planning for Beijing New Airport

BEIJING - Beijing, the second largest city in China with a population over 21 million people, is planning a new airport to supplement the existing Beijing Capital International Airport (serving 86 million annual passengers) as travel demand in the city and region continues to grow. The new airport will ultimately serve up to 100 million annual passengers.

The airport phasing plan includes an initial terminal building with future remote concourses; the APM would not be built in the initial phase, but would be vital for passenger movements when the future satellite(s) enter service, providing a "must-ride" link to future satellite concourses. As such, conceptual APM design is focused on flexibility, allowing the future APM system to serve a range of passenger demand levels, several concourses, and combinations of domestic and international passenger flows.

Lea+Elliott is leading the preliminary planning and conceptual design of the planned APM system as part of the Beijing Institute of Architectural Design (BIAD) team. We are supporting BIAD's design of the initial terminal building with conceptual design and space reservation requirements for a station, guideways and crossovers, power distribution equipment, and related system requirements. The Chief Architect of Beijing New Airport, Xiaoqun Wang of BIAD, speaks highly of Lea+Elliott's work on this project, "Lea+Elliott has provided tremendous leadership of APM system throughout the design process of Beijing New Airport. They provided a highly professional advice for the APM system, which can effectively and efficiently support the varied needs and demands of this project. They are a valuable member of Beijing New Airport design team."

Istanbul New Airport – Space Preservation for Future APM

ISTANBUL - The Istanbul New Airport project construction began in June 2014. Covering nearly 30 square miles of land by the Black Sea, Istanbul New Airport (INA) will become one of the largest airports in the world.

Lea+Elliott is supporting the Istanbul Grand Airport (IGA) Consortium in preserving the appropriate space for a potential, future APM station and related guideway serving Terminal 1. This terminal will be one of the world's largest airport terminals under one roof.

The initial phase of the INA project will include a single Terminal 1 (T1). While there is no APM within T1, it is envisioned that future satellite and terminal facilities will connect with T1 via an APM. Lea+Elliott's analysis included benchmarking the size and characteristics of APM stations/lanes at main terminal buildings for airports of comparable size/activity, and defining the spatial requirements of the future T1 APM station and its associated equipment facilities and guideway tunnels to be preserved for during initial phase of INA construction.

Lea+Elliott is proud to support the IGA Consortium on the construction of the largest new airport ever built.

DART's Closed Circuit Television for Light Rail Vehicles

DALLAS - Dallas Area Rapid Transit (DART) operates a fleet of 163 Light Rail Vehicles (LRV). DART is implementing a Closed Circuit Television (CCTV) System on approximately 25% of its fleet, with proposal options for the remaining vehicles. The DART CCTV LRV system will include wireless connectivity via Wi-Fi and 4G LTE carrier networks seamlessly integrating with DART's existing CCTV network. This will allow DART the capability to remotely access video images from anywhere on the LRV network. Lea+Elliott is assisting DART in the preparation of a Technical Specification. DART has released an RFP and is expecting to start work in spring of 2016. This project represents the next step in providing a high level of service and security for the DART LRV Fleet.

APM Planning and Design at Hong Kong International Airport

HONG KONG - Hong Kong International Airport (HKIA) is a leading hub in Asia, providing 24-hour operations for steadily growing passenger and cargo traffic. HKIA is currently planning a new third runway and Third Runway Concourse (TRC) which are expected to open in 2023. The TRC will ultimately be served by a new, 1.6-mile, 4-track-tunnel APM system providing connections for landside and airside passengers at an expanded Terminal 2 (T2).

Previously, Lea+Elliott assisted HKIA with the planning of the TRC APM system. For two years, Lea+Elliott provided the APM-specific requirements to ensure the full integration of the APM system with the new TRC building and support facilities. In addition, Lea+Elliott planned for the extension of the existing Terminal 1 (T1) APM system to T2 to provide a seamless connection with the new TRC APM system. During this same time period, Lea+Elliott led the planning for the APM system phasing to ensure that the existing APM systems continued to provide high-level operations and maintenance capabilities during the transition to and opening of the TRC APM system.

Lea+Elliott is currently finalizing the detailed design of the new consolidated depot that will serve the new TRC APM system along with the existing T1 and SkyPier APM systems. As a major subconsultant to AECOM, Lea+Elliott further developed the scheme design into a detailed, cohesive depot design. After the completion of the detailed design, Lea+Elliott will provide construction-stage design services through the construction of the depot facility.

Lea+Elliott began working with HKIA in 2010, assisting with the development of an APM master plan for the long-term development of the airport. Lea+Elliott provided an APM systems review of the T1 APM system extension to a new Midfield Concourse and provided critical improvements to the APM systems technical specification to ensure the delivery of a high-quality system.

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About Lea+Elliott

Lea+Elliott is a transportation consulting firm offering a broad range of planning, engineering, program management, and construction management services for clients worldwide. These services are provided to public transit authorities, airports and private sector owners for new transit systems and the refurbishment of existing systems. We have expertise in all modes of transit, including high-speed and intercity rail, rapid transit, commuter rail, light rail, automated guideway transit, personal rapid transit, and conventional and advanced technology buses. The firm is especially well known for its creative structuring of procurements for a wide range of delivery options that include DBOM and P3.

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Meet Eric Phillips, P.E.

The Honolulu Rail Transit Project (HRTP) keeps **Eric Phillips** challenged and enthused. The HRTP is a $5.2+ billon, 20-mile-long automated, fixed-guideway system that will provide high-capacity transit service to 21 stations on the island of O'ahu. For the past five years, Eric has been entrenched in the management of the systems' fixed facility interface design and the review of the communications design system. He and his family lived and worked in Honolulu for three years. Now, with the system in construction, the Phillips family is back in San Francisco where Eric is Lea+Elliott's lead communications engineer for the HRTP, guiding its final design and test development from afar, as it continues to progress.

Some Lea+Elliott employees come to the firm straight from college. Eric travelled a little different journey on his way to Lea+Elliott. Graduating from the University of California, San Diego in electrical engineering, he was recruited to Intel Corporation where he worked as a field applications and test engineer. After, he spent two years trekking across the globe, gaining new perspective and exploring the wider world. He then landed at Columbia University where he designed analog and digital electronic circuit boards for autonomous marine seismic research. He tested and deployed the equipment on ships throughout the Pacific, Atlantic, and into Antarctica. These projects would often find him ship-bound for months at a time. Seeking to contribute to transit work, he joined bus manufacturer, Gillig Corporation as a senior designer, where he performed hardware and software design for control and integration of communications systems into bus designs.

In 2008 he found Lea+Elliott. "The work here is rewarding...," he says, "because we get to be a part of projects that can have such a beneficial impact on cities and communities. At the same time, we work the details, sometimes commenting on a design down to the details of a single bit in a communications protocol and sometimes helping to scope or estimate costs for very large projects. This breadth and depth of work really keeps you engaged and is a strength of Lea+Elliott. I really like synthesizing and arbitrating the goals of clients with the ever-evolving technical solutions from suppliers and integrators—especially working to realize practical solutions while minimizing costs and maximizing value."

Eric keeps abreast of emerging information technology applicable to the transit sector. Concentrating on where technology is taking us, he is helping clients plan for tomorrow, today.