



# Aviation Security Consulting and Management



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## **FIRM HISTORY**

CTI Consulting is recognized as one of the most prominent aviation security consulting, planning, and design corporations in the United States today. CTI's security experts, specialists, and engineers have provided high tech security and programmatic solutions for federal, state, and city governments, major corporations, and the aviation industry since 1986.

CTI is currently working, or has completed projects, in over forty domestic airports, including sixteen of the U. S. Category X-designated airports. The specialized services offered to the aviation community include security assessments to identify client's security needs, design of integrated security and telecommunications systems, and comprehensive security program support. CTI also offers services to airports and air carriers in operations and airport administrative support.

CTI's ability to retain clients, such as the City of Chicago Department of Aviation (O'Hare and Midway Airports) and the Maryland Aviation Administration (BWI) for several years is based on its experience and knowledge of the aviation industry and its expertise in all areas of aviation security. CTI assists airports in responding to and meeting TSA and FAA requirements, guidelines and advisories. Frequently, CTI is asked to represent client airports before the TSA and FAA on pending issues or forthcoming changes.

In the area of design and construction, CTI works very closely with architectural, engineering, planning and construction companies in the planning, design, and construction/ implementation of integrated physical security systems. This includes working with the FAA on behalf of the client in obtaining FAA approval for AIP funding.

CTI prides itself in its master planning for airport security to assist clients with airport expansions and growth. These security master plans are based on an assessment of existing security programs, identification of future security needs based on growth and expansion, and the development of plans, designs, and other recommendations for integrating new security programs with existing ones.

CTI staff members stay abreast of the newest and most cost-effective technologies in security. They are currently assisting major airports in the transition to biometric technologies and in the integration of these new technologies into existing infrastructure.

CTI's professional staff includes aviation professionals who are former directors of airport operations, security directors and chiefs of airport police, systems engineers, systems/technical specialists, security consultants, law enforcement, and security personnel. They are also former administrative staff of aviation industry organizations, such as ACI, AAAE, and AOPA.

CTI is a woman, minority owned corporation certified by the US Small Business Administration and the US Department of Transportation as a Small Disadvantaged Business Enterprise. Headquartered in Germantown, Maryland, CTI has regional offices in Austin, TX, Covina, CA and Chicago, IL. CTI does not represent any security equipment or products, nor does it have any alliances with manufacturers or vendors offering products or services, which ensures our objectivity and provides our clients with the assurance that our only goal is total client satisfaction and the successful completion of all project tasks.



## **AREAS OF CAPABILITIES**

CTI provides recommendations for all aspects of a client's existing conditions - physical, technical and operational. CTI's staff has the knowledge and experience to provide appropriate security solutions utilizing time-tested and proven methodologies, in coordination with new and innovative approaches, as well as existing, planned, or recommended technical security systems to ensure the most effective solutions to reduce vulnerabilities and improve the client's security posture.

CTI's staff utilizes the latest techniques when providing security solutions; CTI staff constantly updates their knowledge of physical security hardware, including the latest equipment, mitigation techniques and industry trends, as well as current terrorist tactics based on intelligence information. CTI has conducted numerous vulnerability assessments and has provided security solutions designed to mitigate identified vulnerabilities, as well as enhance existing operations, equipment, and procedures to ensure the highest level of security possible.

Additional services provided by CTI include interpretation and operational guidance for all applicable federal regulations and public laws reference airports and national threat intelligence information and guidance, including collecting, evaluating and disseminating security and threat information for security planning, technical security guidance, equipment and system upgrade, and technology application.

The following are the areas of capabilities through which CTI supports airports and air carriers and their respective security programs.

### **Security Program Assessments**

- Comprehensive Security Surveys
- Vulnerability/Threat Assessments
- SIDA Enforcement Audits
- Tenant/Cargo Security Plan Review
- Bomb Blast Effectiveness Analysis
- Training Needs Analysis

### **Security System Design and Integration**

- Access Control Design
- CCTV Design
- ID Badging System Design
- Communication Center Design
- Crisis Management Center Design
- Bid Preparation and Evaluation
- Construction Management/Oversight
- Perimeter Control Systems

### **Security Program Support**

- Security Consultant Support
- Security Master Plan Development
- Policy and Procedure Development
- Security Exercise Development
- Regulatory Compliance Support
- Security Training Support
- On-Site Staff Support

### **Administrative Support**

- Emergency Plan Development
- Part 139 Exercise Design
- Cost Benefit and Feasibility Studies
- Comprehensive Manual Development
- Regulatory Impact Studies
- Management and Staff Studies
- Fingerprint Operations Planning and Management



## **AREAS OF CAPABILITIES (SECURITY PROGRAM ASSESSMENT)**

### **Comprehensive Security Surveys**

CTI conducts security surveys of airports to assess three critical security factors: the type and level of potential threats against the airport; the areas and components which make the airport vulnerable to external and internal threats; and the effectiveness of the airports technical, procedural and personnel capabilities. Based upon the findings from these assessments, CTI staff members develop recommendations for the development and installation of new or enhanced security systems, operational and personnel procedures, security personnel training programs, and emergency response procedures.

### **Vulnerability/Threat Assessments**

CTI performs vulnerability studies and threat analysis for air carrier, airport passenger, cargo, and other facilities to assess potential threats, identify areas vulnerable to external and internal threats, and determine capability and effectiveness of security resources. This includes studies on physical security, access control, security/police operations and administration, and security post procedures.

### **SIDA Enforcement Audits**

CTI has assisted airports such as JFK, Newark, LaGuardia, and Hartsfield Atlanta in conducting SIDA enforcement audits to assess the current level of the security enforcement effort and identify areas that can enhance the overall program. These audits are also conducted to prepare airports for the TSA's special emphasis assessments.

### **Tenant/Cargo Security Plan Review**

CTI has worked with Category X and other major airports in designing, implementing and supporting cargo security programs for existing airports, new airports, and airport with new cargo complexes. In addition to designing 49 CFR Part 1542.207 compliant systems and key management systems, CTI negotiates cargo security plans and procedures with the TSA and trains air cargo personnel on security issues.

### **Bomb Blast Effectiveness Analysis**

CTI assists airports, government agencies, and corporations in determining the effect of bomb blasts on existing or proposed buildings, parking structures, and other facilities. CTI is presently on the TSA's nationwide short list of companies capable of conducting bomb blast effect surveys in support of increased security alert levels at U.S. commercial airports. CTI's staff works with architects and engineers in the design phase of airport facilities to insure TSA compliance and meet present and potential threat levels.

### **Training Needs Analysis**

The technical and programmatic skill needs of today's airport personnel require the most cost-effective basic, refresher and advanced training programs possible. CTI assists airports in identifying training needs of various departments based on careful analysis of job skills demands and the present level of staff capability. CTI also performs job task analysis of various positions to assist clients with personnel training and performance evaluation.



## **AREAS OF CAPABILITIES (SECURITY SYSTEM DESIGN AND INTEGRATION)**

### **Access Control Systems**

An Access Control System (ACS) is recognized as the most critical part of an airport security program. CTI assists airports in complying with Transportation Security Regulations for these automated access control systems. CTI services include design of new systems; integration of adjunct and related systems; conducting assessments of existing systems; performing cost benefit analysis of upgrades, replacements, or expansions; and conducting assessments of vendor proposed programs/upgrades.

### **Closed Circuit Television (CCTV) System**

CTI assists airports in assessing existing CCTV systems; upgrading, expanding, and replacing present systems; designing completely new CCTV systems; performing feasibility and cost benefit analyses; reviewing planned or proposed systems; and assessing new products and systems.

### **ID Badging System Design**

CTI has played an active role in the constant upgrade and redesign of airport ID badging systems. CTI assists in the design of ID badging offices and ID badging systems, development of procedures, training of badging personnel, support to automated fingerprinting programs, and develops tenant awareness programs on related procedures.

### **Communication Center Design**

CTI designs and manages the construction of consolidated communication centers. These centers include computer aided dispatch (CAD) systems; dispatch for police, fire and security; integration of access control, CCTV, ID badging, intercom, and LAN/WAN systems; access control alarm monitoring; and enhanced 911 call systems. CTI also develops staffing requirements for these centers.

### **Crisis Management Center/EOC Design**

CTI assists airports and air carriers in the design and construction of crisis management centers. These emergency operation centers typically are integrated with a communication center and, whenever possible, are designed by CTI to be multifunctional; such as doubling as a training center when not used for emergencies. CTI also assists airports in the development and training of personnel on crisis center activation and operational procedures.

### **Bid Preparation and Evaluation**

CTI assists airports in the comprehensive process of contract bid development and award. Services include assistance in bid package planning, specifications, and text; the development of plans and drawings; bid evaluation criteria; bid review, evaluation, and selection; contract negotiations, and awards. CTI also assists in obtaining TSA approval for systems and facility design.

### **Construction Management/Oversight**

CTI provides construction project oversight and management support, including owner's acceptance testing. CTI engineers, inspectors and technical specialists ensure compliance by the construction contractor with the design, functional specifications, and job punch lists. CTI conducts field verification testing, acceptance testing, and assists with other start-up tasks.

### **Perimeter Control Systems**

CTI works with airports in assessing, designing, and upgrading perimeter fencing systems, security lighting, access gates, access barriers, high-tech security fencing, and remote automated access control points. In its work with sensitive government facilities and airports, CTI's staff is familiar with the newest, most effective perimeter security systems and measures.



## **AREAS OF CAPABILITIES (SECURITY PROGRAM SUPPORT)**

### **Security Consultant Support**

Airports of all sizes rely on CTI security consultants for technical, program, and regulatory advice. These services are provided on retainer or task order type contracts. They may require assigning consulting staff permanently to an airport or having dedicated staff on call for that client, depending on the needs of the airport. Quality of these services is demonstrated by the fact that CTI has been the security consultant for O'Hare and Midway Airports for over 20 years.

### **Security Master Plan Development**

Security Master Plan development is based on a process that includes a methodical approach in which existing conditions and objectives are weighed against known and other considered targets, threats, methods, and tactics. The results of this methodology is the development of a 'Phased' enhancement option implementation plan to use towards decreasing the severity of the 'conditional risk' and associated 'quantified' damage.

### **Policy and Procedure Development**

Policies and procedures constitute the day-to-day implementation of an airport's security program and provide the program's necessary structure. CTI assists airports in developing, reviewing, and updating their policies and procedures to comply with TSA requests and regulatory requirements while minimizing the possibility of TSA violations.

### **Security Exercise Development**

Airports are required to conduct security related tabletop and simulation exercises utilizing security measures from the various securities alert levels from the airport's contingency plans. CTI assists airports in developing, presenting, and/or evaluating such exercises and in developing corresponding exercise manuals. CTI

works closely with the entire airport community on these projects.

### **Regulatory Compliance Support**

CTI assists airport clients in enhancing their security programs as required by current Security Directives and 49 CFR 1540, 1542, 1544, 1546, and 1548. CTI is familiar with the provisions detailed in the Airport Security Improvement Act of 2000 and the Aviation and Transportation Security Act. CTI provides guidance reference Civil Aviation Organization (ICAO) Annex 17, Information Circulars (ICs), Emergency Amendments, and 14 CFR Parts 121, 129, 135 and 139. CTI has completed several ASPs and AEPs. CTI staff participates in aviation industry committees such as the ASAC, RTCA Part 107 Standards Subcommittee, FAA Parts 107/108 Rewrite Working Group, and the UAS Working Group. CTI staff members also served on the New Construction Security Guidelines task force.

### **Security Training Support**

CTI support for agency or facility security programs includes conducting comprehensive training needs analysis, and developing and conducting training programs for security and police personnel in all facets of security. Training programs include physical security, access control, counter terrorism, policies and procedures, management and supervision; and tenant and employee security awareness.

### **On-Site Staff Support**

CTI also provides on-site staff support in specialized functions such as access control coordinators, employee history investigation auditors, ID badging staff, fingerprinting specialists, and SIDA security enforcement auditors. CTI also provides permanently assigned trainers for SIDA training, airfield drivers training, and Automatic External Defibrillator (AED) training.



## **AREAS OF CAPABILITIES (ADMINISTRATIVE SUPPORT)**

### **Emergency Plan Development**

The FAA updated the Airport Emergency Plan (AEP) Advisory Circular (AC) 150/5200-31A, and as such, has standardized the development of the AEP and assisted in the overall coordination with the local community Emergency Operations Plan by using similar methodologies. Although this AC provides guidance in meeting requirements outlined in 14 CFR Part 139.325 and is not regulatory in nature, the guidance is mandatory for those airports expending funds allocated under Federal grant assistance programs or funds received from the Passenger Facility Charge program. In addition, CTI is well versed with the latest 14 CFR Part 139 requirements; CTI ensures that AEPs are in full compliance with it and ensure coordination of security incidents mentioned in the AEP with existing ASPs.

### **Part 139 Exercise Design**

CTI assists in developing and evaluating FAR Part 139 disaster simulation exercises designed for an organization's mission, staffing vulnerabilities, response strategies, and FAA requirements. CTI also evaluates responses to air crashes in an effort to enhance organizational preparedness and response capability.

### **Cost Benefit and Feasibility Studies**

CTI provides feasibility and cost benefit analyses for aviation related programs, such as new or expansion airport design, construction, security, or the implementation of TSA and FAA regulatory driven programs that impact on an airport community. These analyses include the collection of raw data that service as the foundation for a complete assessment in natural units, such as labor hours, aircraft, vehicles, or other resources. Dollar equivalents are applied to these units to support final analyses and appropriate recommendation for feasibility, cost, and benefits.

### **Comprehensive Manual Development**

Airports are required to maintain and update their respective airport certification manual (ACM) under FAR 139.205. The FAA conducts an annual review of the ACM's to determine if they are reflective of changes made to various aspects of the airport. CTI supports airports through the review and update of their ACM's, insuring that changes to operating procedures, facilities, equipment, responsibility assignments, and other information needed by personnel concerned with operating the airport are included.

### **Regulatory Impact Studies**

CTI assists airports and air carriers by researching the impact of proposed regulatory reform. The staff of CTI is familiar with all applicable regulations that affect commercial air carriers and airports, as well as peripheral aviation legislation, advisories, and guidelines, such as DOT regulations and federal/transportation acquisition regulations.

### **Management and Staff Studies**

Management and staff studies become more important as airports grow; the workforce increases and responsibilities change. CTI works with airports to identify staffing and reorganization challenges an airport may face. CTI has worked closely with the aviation community in conducting comprehensive reviews, assessing plans for future expansion and growth, and formulating strategies, plans and programs to address client needs.

### **Fingerprint Operation Planning and Implementation**

CTI assists airports with planning, staffing, training, and start up operation of their fingerprint programs. CTI provides knowledgeable staff for guidance during start-up or to perform duties on a regular basis.



## **CLIENT AIRPORTS**

Airports where CTI is currently working or has completed projects include the following:

### **Category X Airports**

- Baltimore/Washington International
- Boston Logan International
- Chicago O'Hare International
- Detroit Metropolitan Wayne County
- George Bush Intercontinental
- Hartsfield Atlanta International
- JFK International
- Los Angeles International
- Luis Muñoz Marin International
- Miami International
- Newark International
- Philadelphia International
- Phoenix Sky Harbor International
- Ronald Reagan Washington National
- Seattle-Tacoma International
- Washington Dulles International

### **Other Client Airports**

- Allegheny County GA Airport
- Austin-Bergstrom International
- Birmingham International
- Bob Hope (Burbank-Glendale)
- Charlotte Douglas International
- Charlottesville-Albermarle
- Chicago Midway
- Cincinnati/Northern Kentucky International
- Columbus Metropolitan
- Ellington Field
- Deer Valley GA Airport
- Goodyear GA Airport
- Hanscom Field
- Harlingen Valley International
- Hartford Bradley International
- Huntsville International
- Jackson International
- Kansas City International
- LaGuardia International
- Louisville International
- MidAmerica St. Louis
- McAllen Miller International
- Monterey Peninsula
- Naples International
- Nashville International
- New Orleans Lakefront
- Ontario International
- Piedmont-Triad International
- Pittsburgh International
- Reno-Tahoe International
- Roanoke Regional
- Rochester International
- San Diego International
- Tallahassee Regional
- Ted Stevens Anchorage International
- William P. Hobby
- Worcester Regional

### **Other Aviation-Related Clients**

- Air France
- ATA Airlines
- Coalition of Airline Pilots Association
- Continental Airlines
- Delaware Valley Planning Commission
- FAA
- LSG Sky Chefs
- USAirways





## SAMPLE PROJECTS

### City of Chicago Department of Aviation



CTI has been the security consultant for the City of Chicago Department of Aviation (DOA) since 1987, when CTI conducted a comprehensive security management study of O'Hare, Midway, and Meigs. CTI is presently a prime contractor, as the security consultant, for the operation, maintenance, and technical support of the O'Hare Communications/Dispatch Center (OCC). The center consists of Police, Security, Fire/EMS Dispatch, access control alarm response; the ID Badging center; an enhanced-911 call system; crisis management center for command and control of airport response to emergencies. In 1991, CTI assisted the airport in the design of a command-communications-crisis management center complex, which also included access control alarm monitoring and security dispatch for FAR 107.14 alarms. In addition to working on the preliminary design and system specifications, CTI oversaw construction of the Division 17 systems.

CTI currently has a contract to manage the OCC access control coordination center and also to fully support the OCC in all security related matters, including providing advisory services relating to TSA compliance issues, the airport security program, DOA policy and procedures, and enhanced security levels. CTI provides parallel services at Midway Airport where it supports the ID badging office and manages the MDW access control coordination center. In the past, some of these services include the following:

- A post 9/11 vulnerability assessment of the Airport for the Department of Aviation to assess threat and inventory the security measures that the Airport had implemented.
- A bomb blast analysis of the O'Hare Airport core terminals in order to obtain an exemption from the TSA/FAA 300 foot parking restrictions.
- A Bomb Incident Prevention Plan (BIPP) assessment for O'Hare and Midway Airports.
- Development of a Y2K Preparedness program that was instrumental in facilitating the upgrade of equipment and technology at the airports.
- Operation of the Automatic External Defibrillator training program for DOA employees, other airport employees, and employees from other City departments.
- Fingerprint program development and operation when TSA demanded fingerprinting of all new employees, then all current employees, then all employees with access into the sterile areas.
- Support of the ID Badging Offices the onset of the ISSOCCS project in 1991, when CTI staff spends four months at the airport in re-badging all forty thousand airport employees as part of the new integrated badging system.
- Revision of policies and procedures as necessary as the access control program was implemented and tweaked when new.
- Development and integration of access codes into the badging media and insuring that that program functioned correctly.
- Re-badging or revalidating the entire airport employee population of the airports on several occasions due to TSA/FAA mandates.



- Planning, implementation, and management of the Access Control Coordination Centers for O'Hare and Midway
- Management of Transient Air Crew PIN program allowing access to air crews not stationed in Chicago.
- Establish FAA mandated security consortium to conduct vulnerability assessment after the TWA 800 crash, with participation of all tenants and federal law enforcement agencies.
- Negotiation and arbitration with TSA/FAA on behalf of DOA on security matters, security breaches, and mandated/recommended changes to security program.
- Conducted studies of ID badging office operations, procedures, systems, and client reaction to services.
- Developed job task analysis of all dispatch functions and calls for service.
- Wrote/revised policy and procedure for ID badging office, OCC, and crisis management center
- Conducted training of OCC supervisors on Supervisory Development
- Conducted training on crisis management center activation and operation.

In 1993, CTI began work on Terminal 5, a new 22-gate International Terminal, which became operational after a three-year design and construction period. CTI participated in Division 17 coordination. Beginning In 1996 CTI represented the City through the Project Management Office on the New Midway Passenger and Parking Structure project, providing security advisory services on the security systems to be implemented and in getting FAA approval.

### Monterey Peninsula Airport



CTI conducted an initial comprehensive threat, vulnerability, and risk assessment (TVRA) to identify vulnerabilities and present effective countermeasures. Completion of the TVRA required the development of a prioritized list of enhancement options (recommendations for improvements, critical milestones, enhancement options, and cost estimates).

CTI's methodology for the completion of the TVRA included in-depth studies, key personnel interviews, and analyses and observations of airport operations, site visits to observe functional operations, and extensive review of documentation including airport policies and procedures. Interviews, analyses, and observations reporting were done with the focus on the security afforded the subject area or the vulnerabilities that existed in those areas that could possibly be exploited. Moreover, the TVRA was developed based on a process that included a methodical approach in which existing conditions and objectives were weighed against known and other considered targets, threats, methods, and tactics. The results of this methodology was the development of a 'Phased' enhancement option implementation plan to use towards decreasing the severity of the 'conditional risk' and associated 'quantified' damage.

Subsequent to that, CTI is currently provided security engineering and design services for the replacement of the Airport's existing access control and photo ID systems. The systems upgrade includes a wireless network installation for remote areas, distributed control architecture, integrated Photo ID, digital video recording and storage with system management and archiving, intercom system, automatic alarm paging,



and graphical user interface uniting all element under a common interface. CTI's responsibilities include providing on-site support regarding continuous security program upgrade. CTI also provided engineering and design solutions to solve access control problems identified by the initial assessment regarding access into and out of the Airport's baggage claim area. CTI assisted in the bid, technical analysis, and recommendation phases and is providing construction administration support to verify compliance with the construction documents.

### **Baltimore/Washington International Airport**



CTI is responsible for providing the following services: the implementation of security amendments/ directives; review of construction designs and plans for new and renovated facilities; conducting vulnerability surveys and security audits as tasked; provides support in the strategic planning for security program and related security systems; assist with updates and changes to the Airport Security Program (ASP), Airport Certification Manual (ACM), and Airport Emergency Plan (AEP); assist with planning and preparation of the Aviation Security (AVSEC) exercise, AEP Tabletop Exercise, the biennial Hijacking Exercise, and the triennial EPLEX exercise as directed; attend meetings and conferences regarding airport security, operations, and construction issues; appraise the airport of projected changes to civil aviation security; assist with developing and conducting security training for airport staff, Maryland Transportation Authority Police, and Martin State Airport employee population; and staff augmentation to include Fingerprint Technicians, SIDA Trainers and criminal history records check adjudication processing. Tasks completed include:

- The re-write of the ASP, AEP, ACM in accordance with regulatory revisions to 49 and 14 CFR, all three documents were subsequently approved by TSA/FAA.
- Developed a Lock and Key Control Program which was reviewed by TSA and approved, subsequent to approval conducted audit of the lock and key system IAW new control program to certify the system, educate lock and key system managers and users, establish system baseline, and provide recommendations for system improvements.
- Provided assistance in the planning, development, and evaluation of the airports triennial emergency exercise.
- Provided Airport Rescue and Fire Fighting technical and administrative support.
- Staff augmentation to meet security requirements for Fingerprinting, SIDA Training, CHRC results processing.

CTI is the primary qualified vendor for audit and inspection services in four of five inspection categories: 14 CFR 139 Compliance Audit and Inspection Services; 49 CFR 1542 Compliance Audit and Inspection Services; NFPA Compliance Audit and Inspection Services; and 29 CFR 1910 compliance Audit and Inspection Services; and is a qualified vender for the fifth inspection category, Contracts and Other Obligations Audit and Inspection Services. Assigned audits and inspections include:

- Two inspections to ensure that the BWI Fire and Rescue Department has conducted training and that its recordkeeping IAW 14 CFR 139



- Conducted annual audit of the BWI Lock and Key Control Program to ensure compliance with 49 CFR Part 1542, the airports ASP, and the airport lock and control program procedures.
- Conducted a random inspection of all BWI SIDA badged employees to ensure SIDA training is compliant with 49 CFR Part 1542, and the Airport Security Program and that training is provided prior to issuance of the SIDA Badge.
- Conducted audit of Fire and Rescue Department equipment and supplies provided by Maryland Emergency Management Agency Grant Funds to ensure compliance with the provisions of the grant funding.

CTI has also designed and developed the specifications for the systems to be installed in the Dispatch and Command centers. The systems include: airport Access Control; audio communications (paging); radio communications; CAD; CCTV; multi-user flight and baggage information display; fire exit alarm; cabling (copper; fiber optic) as electronic communications media; security & communications conduit.

Subsequent to the events of September 11, CTI's provided immediate staff support and consulting services to BWI. This support included assistance with interpretation of EA/SD, development of implementation plans, captured airport cost incurred during heightened security, conducted Bomb Blast Analysis which resulted in the return of the Hourly Parking Lot to service. Developed, integrated, implemented, and initially staff BWI Airports fingerprint Program; to include: Standard Operating Procedures (SOP), procedural guides, and checklists data base program development, trained client employees in use of AFIS equipment and provided oversight of equipment installation, upgrades, and repairs.

Additionally, CTI development of a vulnerability assessment geared to identify the airport security posture prior to September 11, actions taken after September 11, vulnerabilities that still exist, and recommendation to mitigate possible threats. Assessment included some of the following areas: terminal security, employee searches and the insider threat, perimeter control, garage security, compliance and enforcement of airfield security, general aviation, cargo security, passenger screening checkpoint security breaches, fuel farm security, airport construction program, mass transit risk to the terminal, education and training, chemical-biological threat, and airport buses, shuttles, and vans. The directed focus of this assessment provided a baseline from which BWI could rapidly establish a proactive action plan to enhance the overall security posture at BWI Airport.

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### **Birmingham International Airport**



In 2004, CTI was asked by BHM to conduct a complete upgrade of the TSA approved Airport Security Program (ASP), which was completed and submitted to TSA and subsequently approved. CTI also completed a TSA-mandated Bomb Incident Prevention Plan (BIPP) in association with the Homeland Security Advisory System (HSAS) threat condition protective measures.

CTI is currently performing engineering services associated with the replacement, upgrade, enhancement, and/or modifications of the Security Surveillance System. Project responsibilities include conducting an assessment and providing a design with detailed specifications and drawings, assisting in the bid and/or negotiations phase, and providing installation oversight and owners acceptance testing. The approach



being utilized includes a migration to the digital side from the analog side by upgrading the existing Vicon System to support network based communications. This approach utilizes the strengths of each system type in order to accomplish the overall mission. The analog portion of the system includes the cameras, switcher/controller and monitors converted to use network communications and coupled with a digital recording and archiving system. The final design will include coverage of the Terminal, the Parking Garage, Remote Parking areas, and a solution for the Perimeter.

Based on its work on this project, CTI was asked to prime a contract to design, develop a bid package for, and oversee the construction of, an emergency operations center (EOC) over the next year. CTI is currently in the design phase of the project, having already completed a preliminary assessment to recommend a site for the facility, which will be located in an appropriate centralized location, in which BHM can continue to function and provide interagency coordination and executive decision making for managing disaster response and recovery. In addition, the design will meet specific requirements, including: Flexibility, Sustainability, Security, Survivability, and Interoperability.

In addition, CTI's responsibilities include design and engineering services related to the upgrade of the airport's access control system; as well as a study and additional design services regarding perimeter intrusion detection and airport security infrastructure requirements.

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### Los Angeles World Airports



CTI completed a Unified Command study between the Los Angeles World Airports Police Department (LAWAPD) and the Los Angeles Police Department (LAPD). The primary goals of the project included assessing the existing overall police services at LAX, assessing the current unified command structure of police services between the LAWAPD and the LAPD with respect to police services at LAX, and to provide recommendations that would optimize the overall security program of the Airport through the better use of LAWAPD and LAPD resources, including addressing those issues

involved with a possible merger of the two organizations.

Major tasks completed by CTI as a requirement of this study included:

- A study of existing organizational structures of LAWAPD and LAPD as they relate to LAX and other law enforcement agencies at LAX
- An examination of other airport law enforcement organizational structures.
- Identification and analysis of potential organizational structures resulting from a merger.
- Development of estimates of cost for both agencies regarding a merger.
- Recommendation of an organizational model based on analysis and discussions with all parties.

The following are the primary areas that CTI evaluated in order to obtain the information necessary to fully develop the recommendations submitted as part of the final submittal:

- A cost analysis of having overlapping municipal law enforcement agencies at LAX; specifically those law services provided by the LAWAPD and LAPD, including the costs associated with maintaining an LAPD sub-station at LAX.
- An analysis of current training – type of training, level of training, and frequency of training related to the Airport (LAPD and LAWAPD)



- Assessment and identification of current mission and mandates of the LAWAPD and their ability to achieve them.
- The ability of the law enforcement entities at LAX (LAWAPD, LAPD, FAA, FBI, TSA, CHP, Department of Homeland Security, DEA, U.S. Customs & Border Protection, Los Angeles Sheriff Department, etc.) to respond to major incidents including, but not limited to bombings, hijacking, WMD, active shooters, civil unrest, and major aircraft incidents.
- Report on the response protocols of the relevant law enforcement agencies at LAX and any deficiencies in command, control, and communications between overlapping agencies at LAX.
- Report on the need for tactical response capabilities at LAX and recommend the most effective method of deploying those resources, including addressing whether or not it is reasonable for the LAWAPD to maintain an onsite resource or whether the LAPD or another agency should perform this function.
- Report on the community expectations as to the delivery of law enforcement and security services at LAX and whether the LAWAPD or the LAPD are best able to deliver services that meet those expectations.
- Study and report on the LAPD merger with the Metropolitan Transit Authority (MTA) Police and current status of LAPD services being provided to the MTA.

CTI was also charged with providing a complete re-write of LAX's ASP. In addition, CTI completed a TSA-mandated Bomb Incident Prevention Plan (BIPP) in association with the Homeland Security Advisory System (HSAS) threat condition protective measures. CTI also completed a re-write of the ASP for Ontario International Airport, as well as the completion of a BIPP and regulatory guidance and consultation.

### **Massachusetts Port Authority**



CTI was responsible for providing professional security and counter terrorism consulting services relative to security enhancements at all Massport facilities and operations, including Boston Logan International Airport, Worcester Regional Airport, Hanscom Field, the Logan Office Center, and the Port of Boston. This includes, but is not limited to: comprehensive security vulnerability assessments; federal regulation and public law interpretation and operational guidance; security technological research and evaluation (facial recognition, document verification, vehicle inspection, inspection of persons, explosives trace and weapons detection, etc.); security design review of capital projects; security screening checkpoint design assessments; perimeter control solutions (including intelligent video); development and presentation of security awareness briefings for Massport employees (15,000+); development and coordination of security access badge revalidation program; and guidance and consultation related to security and counter terrorism matters on an as-needed basis.

CTI also designed and developed plans and specs for a networked video system on a distributed video platform incorporating next-generation video distribution and management systems to increase functionality and flexibility at all passenger security screening checkpoints. The design also identifies equipment, locations, and operating functions and components of the digital video recording (DVR) closed circuit television (CCTV) system installed including the requirement for its



architecture to be easily scalable with no infrastructure changes. It was also designed to centralize or decentralize video recording, integrate with ACAMS and other rules based systems, provide support for voice and videoconferencing, be 99.999% reliable, have no single point of failure, and use of Off-the-Shelf products. CTI's effort included bid development, bid selection, installation oversight, and owner acceptance testing and testing guidance. The system was developed for these event triggers to occur at the hardware or software level, and combined CCTV/ACAMS systems. The CCTV system included fast CCTV response (no manual human reaction required), automatic digital CCTV recording of alarms and alarmed portals, and single-monitor CCTV monitoring workstations

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### **Austin-Bergstrom International Airport**



CTI was the prime contractor for the City of Austin's Department of Aviation for the complete security system engineering and design at the new Austin-Bergstrom International Airport, a conversion of the Bergstrom Air Force Base facility. This contract included the development of an initial, comprehensive airport security program, the related master security plan, and all security policies and procedures. It also included design and implementation of automated access control systems throughout the airport (compliant with current CFR 1542 requirements), as well as an integrated command and control facility for all police, security and fire functions, CCTV, ID badging, perimeter gates and fencing, and security for the cargo complex, public parking, and

general aviation areas.

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### **Houston Airport System**



CTI completed a Security Master Plan for the Houston Airport System (HAS), which includes George Bush Intercontinental Airport, a Category X designated airport, William P. Hobby Airport, a Category I designated airport, and Ellington Field, a General Aviation/military hybrid airport. Master Plan development required the completion of a comprehensive Threat, Vulnerability and Risk Assessment (TVRA) for each airport. Completion of the TVRA required the development of a prioritized list of enhancement options (recommendations for improvements, critical milestones, options, and cost-benefit analyses), and related threat matrices.

In order to analyze and assess the overall security posture at each HAS airport, CTI completed several specific single-scope reviews, which together made up an integral part of the comprehensive TVRA Report. The TVRA was divided into two separate areas of focus; Threat Vectors and Operations, Infrastructure, and Systems.

CTI also provided the Aviation Department with consulting services and guidance on a continuous basis. CTI's experience and industry insight was utilized on a regular basis to provide guidance regarding regulatory compliance issues, implementation of Security Directives and other TSA directives, interpretation of regulations and other documentation, emerging technologies, and benchmarking of other



airports. CTI's expertise regarding the development TSA-compliant Airport Security Programs (ASP) was recognized by HAS as CTI was charge with providing a complete re-write of the document for both Bush Intercontinental and Hobby Airports, which were completed and submitted to TSA, and subsequently approved.

CTI also completed a TSA-mandated Bomb Incident Prevention Plan (BIPP) in association with the Homeland Security Advisory System (HSAS) threat condition protective measures for both Bush Intercontinental and Hobby Airports. T

In addition, CTI completed a Staffing Analysis of the Public Safety Department. The Staffing Analysis was designed to provide guidance regarding the necessary coverage versus existing staff and included recommendations options to enhance the overall operation and to maximize the Department's capabilities; the study was utilized as a justification for requesting additional personnel and addressed the following:

- Deployment efforts
- Scheduling
- Enhancing coverage
- Modification to existing post duties

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### **City of Phoenix Aviation Department**



CTI conducted an initial comprehensive threat, vulnerability, and risk assessment with several enhancement options to identified vulnerabilities. Subsequent to that, CTI provided security engineering and design services for the replacement of the Airport's existing access control and photo ID systems. CTI provided security engineering and design services for the replacement of the Airport's existing access control and photo ID systems. CTI also provided engineering and design solutions to solve access control problems identified by the Airport and FAA including security for two future ARFF stations, curtailing of piggybacking at identified access controlled locations, and design requirements for a new Premise Distribution System, to be implemented under a later project. CTI assisted in the bid, technical analysis, and recommendation phases and provided construction administration support to verify compliance

with the construction documents.

In 2004, CTI completed a Security Master Plan for the City of Phoenix airport system, which includes Phoenix Sky Harbor International Airport, the newest Category X designated airport, and two General Aviation airports - Deer Valley and Goodyear. Master Plan development required the completion of a comprehensive Threat, Vulnerability and Risk Assessment (TVRA) for each airport. Completion of the TVRA required the development of a prioritized list of enhancement options (recommendations for improvements, critical milestones, options, system conceptual design, and cost-benefit analyses), and related threat matrices.

CTI also provided a continuous consulting service to the Aviation Department. CTI's experience and industry insight was utilized on a regular basis to provide guidance regarding regulatory compliance issues, implementation of Security Directives and other TSA directives, interpretation of regulations and other documentation, emerging technologies, and benchmarking of other airports. CTI's expertise





regarding the development TSA-compliant Airport Security Programs (ASP) was recognized by CPAD as CTI was charge with providing a complete re-write of the document, which was completed and submitted to TSA, and subsequently approved.

CTI also completed a TSA-mandated Bomb Incident Prevention Plan (BIPP) in association with the Homeland Security Advisory System (HSAS) threat condition protective measures.

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### San Diego International Airport



CTI conducted an initial comprehensive threat, vulnerability, and risk assessment with several enhancement options to identified vulnerabilities. Subsequent to that, CTI was retained by the Airport to provide them with security engineering and design services on an "On Call" basis. CTI provided consulting for the modification of the existing Access Control and Alarm Monitoring System (ACAMS) and the Closed Circuit Television (CCTV) System for the Baggage Expansion project as part of the TSA's overall baggage screening program. CTI also performed an extensive site

survey of the existing CCTV System as installed including hardware, cabling and cabling infrastructure and then document our findings in both narrative and drawing form. CTI prepared construction specifications and drawings for upgrading the existing CCTV System which included replacing old/outdated cameras with hi-resolution color cameras, upgrading old/outdated PTZ cameras with new self-contained dome cameras, adding new cameras where needed, deleting camera locations that were not required, replacing video cassette tape recording devices with full digital video recording hardware, providing a full digital archiving and retrieval system, and provided computer workstations for managing and viewing video. CTI was also retained to conduct random and scheduled site inspections of ongoing installation of the CCTV System Upgrade project, participated in punch list inspections, system commissioning, acceptance testing process and verifying contractor compliance with contract requirements. After 9/11, CTI was asked to conduct another comprehensive threat, vulnerability, and risk assessment that resulted in several enhancement options to identified vulnerabilities.

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### Huntsville International Airport



CTI's responsibilities include support of HSV with its security system upgrade, screening checkpoint renovation, and with a comprehensive threat, vulnerability risk assessment (TVRA). In 2004-'05, CTI conducted an assessment of the Airport's security systems to identify needs, recommend upgrades, and special applications of new, cost effective technologies for systems originally designed by CTI in 1999, that had become outdated. In late 2005, CTI was asked by the Airport to conduct a comprehensive TVRA, in order to identify security needs and recommendations, cost and prioritize these enhancement options, formulate a security master plan (SMP); and make the SMP symbiotic with the Airport Master Plan.



Additional responsibilities include assisting the Airport in coordinating airport construction projects to incorporate security capabilities, functionality, and compliance with Airport and TSA requirements. Included is the expansion and renovation of the passenger screening checkpoint, which has required system cut over for access control and CCTV fiber optic routing pathways, thus insuring system continuity and cost effective design to accommodate pending systems development. The new checkpoint project consists of building new checkpoint lanes, demolishing old lanes, building new exit lanes and placing TSA offices and other facilities within the checkpoint, all without affecting the operation of the checkpoint. CTI's continuing work includes the development of an upgraded access control and CCTV system design, preparation of bid specifications, bid evaluation, and construction oversight.

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### **Washington Dulles International Airport**



CTI has provided security-consulting services to IAD since 1999. The services provided include: the rewrite of the Airport Security Program (ASP) and subsequent mandated amendments in accordance with aviation regulations; production of new Security Identification Display Area (SIDA) and Air Operations Area (AOA) driver training films and curriculum redesign and implementation of updated SIDA and AOA driver training classroom instruction programs; implementation of the annual employment history audit program in accordance with the ASP Amendment #AP 00-01; assumption of the criminal record fingerprinting function; rewrite of the Airport Certification Manual (ACM); and assistance with the airport's triennial FAR Part 139 full-scale emergency exercise. CTI participated in a Security Threat Assessment for DCA and IAD. This study identified and evaluated security threats, assessed vulnerabilities, and prioritized security requirements. The scope of work included such tasks as identification and evaluation of physical threats (terrorism, sabotage, weapons of mass destruction, protective forces, barrier technology) and technical threats (covert implants, intercepts, taps); assessment of cyber security (network security, computer security, intrusions detection, audits and evaluation); counter terrorism; counterespionage; modeling and simulation of threat; vulnerability and risk, consequence management; and cost-effectiveness assessment.

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### **Jackson International Airport**



CTI provided assessment, design, bid analysis and construction oversight for a \$4 Million Security Improvements Project that consisted of the complete replacement of all Airport Authority Security Systems (access control, CCTV, ID/Badging) and terminal renovation to create a new Airport Police Facility. Areas within the new Police Facility include an Airport Operations Center and Dispatch Office, Airport Police Office Suite, Police Training Area, ID/Badging Office, Public Safety and Operations Offices, and an executive-class Crisis Management Center. Key design features within the Police Facility include a self-contained, multi-person Security/Police Operations console, Police holding cells and interview areas, SIDA training room, secure weapons and evidence storage areas, Police locker/training/workout area, and a self-contained Crisis Management Center Area equipped with caucus and interview rooms, cable TV and LAN connections, break room facilities, and remote monitoring and control of the Jackson CCTV System. The renovation to create the



new Police Facility involved site assessment, demolition, architectural/electrical/mechanical design, replacement and addition to HVAC and electrical system for the new load, and creation of a premise distribution system. As part of the Security Systems work at the Jackson International Airport, CTI's design work also included CCTV installation and remote monitoring at Hawkins Field, a general aviation airport located in Jackson but removed from Jackson International Airport, and retrofit to the Jackson Airport Mobile Command Post to allow remote viewing and control of a telescopic mast-mounted CCTV camera via a cellular network.

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### **Ronald Reagan Washington National Airport**



CTI has been providing security consulting services to DCA since 2000. Consulting services provided include: developing mandated amendments to the ASP; production of new SIDA and AOA driver training films; curriculum redesign and implementation of interactive SIDA and AOA driver training classroom instruction programs; assistance with the annual AVSEC tabletop exercise; rewrite of the Airport Emergency Plan (AEP) in accordance with FAR Part 139 and related Advisory Circulars. CTI participated in a Security Threat Assessment for DCA and IAD. The study identified and evaluated security threats, assessed vulnerabilities, and prioritized security requirements. The scope of work included such tasks as identification and evaluation of physical threats (terrorism, sabotage, weapons of mass destruction, protective forces, barrier technology) and technical threats (covert implants, intercepts, taps); assessment of cyber security (network security, computer security, intrusions detection, audits and evaluation); counter terrorism; counterespionage; modeling and simulation of threat; vulnerability and risk, consequence management; and cost-effectiveness assessment.

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### **Hartsfield-Jackson Atlanta International Airport**



CTI developed a security master plan through a comprehensive assessment of the Airport's security program. This project included an assessment of the Airport's communications center, access control monitoring center, and the crisis management center, with a focus on how coordination and consolidation of these functions with others can enhance the overall operation of the airport. The study included: the Airport's telecommunications system and area networks; access control, ID badging, and CCTV; assessment of staffing requirements; cargo and general aviation security; and the ability of the Airport to meet future expansion and construction needs. CTI also assisted the Airport with SIDA enforcement audits and rapid response to special emphasis assessment issues.