Type of Facility Represented	**Access control point and perimeter detection and assessment system on a military installation. Access control for stand-alone buildings, including Navy refueler and hangar on Base**
Firm's Name	**ECSI International, Inc.**
Name of Project	**Design-Build of Integrated Base Defense Security Systems (IBDSS)**
Location of Project	**Tinker AFB, Oklahoma**
Owner	**U.S. Air Force**
Summary of Project Role	**ECSI was a Prime Contractor. ECSI self-performed 80% of its scope – planning, project management, site survey, design, fabrication, testing, installation, commissioning, operational staff training.**

Project Description: ECSI was the prime contractor providing planning, project management, design, fabrication and installation of the security system for this Access Control Point (ACP) and Perimeter Detection and Assessment System to protect flight lines at Tinker AFB. The project was a single task order under the IBDSS program, which involved the security upgrade of three (3) ramp areas: AWAC Alert Area (included the alert building, hangar, and maintenance building); the Navy Ramp; and the AWAC Parking Ramp.

ECSI performed an extensive site survey, system design (35%, 65%, 100% design), manufacturing of equipment, delivery of equipment to site, system installation, testing, and commissioning of system, and operational staff training. During site survey, ECSI reviewed and documented the existing state of the site and existing control systems. During fabrication, ECSI worked with the customer and Base Operations to complete acceptance testing in its factory in New Jersey. This allowed for all components to be tested before shipment and installation on the site. At the site, ECSI completed installation, further testing, and final commissioning and training of the operational system.

A significant portion of ECSI's design and implementation included providing an Automated Access Control Point for vehicle and pedestrian access to a secured area and stand-alone systems into a central control monitoring station.

Access Control Point and Systems – The ECSI solution provided two lines of detection for one protected area and an additional detection and tracking capability beyond the protected area boundary. ECSI used current certified sensors in conjunction with leap-ahead technology to meet the probability of detection (Pd) rates established in the Tinker AFB Security Upgrade Project Specification. By using the Perimeter Surveillance Radar System (PSRS) and Manportable Surveillance and Target Acquisition Radar (MSTAR) in conjunction with a Policy-Based Video Motion Detection System and fixed and PTZ cameras, ECSI provided an all-weather system to detect, track and identify targets beyond the protected area.

ECSI's plan included the implementation of a layered multiple detection approach. It integrated Government Furnished Equipment (GFE), such as the PSRS, MSTAR and the Wide Area Surveillance Thermal Imager (WSTI), with sensors and an Annunciator certified and/or used by the Air Force. All technology components are monitored and controlled from the Video Command and Control (VCC) System

that was installed. A Policy-Based Video Motion Detection System was "anded" with the PSRS and MSTAR to increase the probability of detection and to reduce the high nuisance and false alarm rates of ground base radar systems. Pan tilt and zoom (PTZ) cameras were strategically positioned to access alarms received from any of the ground-based radars, the Video Detection System, based on the configurable rules and policies, determine if it is a valid intrusion alarm utilizing intelligent VMD algorithms.

ECSI's scope included an **Automated Access Control Point (ACP)** for control of vehicle and pedestrian access to a secure area of the base. The vehicle ACP consisted of an entrance vehicle trap consisting of two barriers to ensure that only one vehicle could enter the secure area when access was granted through the presentation of a valid ID card and PIN at the card reader. The two barrier entrance consisted of a lift gate and a K-12 rated sliding gate that created an entrapment area to prevent vehicle tailgating. The pedestrian ACP consisted of a turnstile, which was designed to ensure no possible tailgating when access was granted through the presentation of a valid ID card and PIN at the card reader. The Automated Access Control Point was monitored by several situational awareness and transactional cameras that captured the overall ACP area, as well as the faces of the pedestrians and license plates of the vehicles. These cameras, coupled with an integrated intercom system, eliminated the need for a guard to be physically stationed at the ACP.

ECSI completed the site survey and conceptual design, including the evaluation of the subsystem to be used, and development of the technology employed in providing a complete security system design.

Energy Efficiency **–** ECSI uses all low-voltage equipment and power consumption is minimized based on energy efficient equipment of the system.

Sustainability **–** ECSI's system is configured to be controlled by one or two people in a central area, maximizing control and maximizing response time. ECSI also specifies sufficient spare parts (5% to 8%) shipped to the site at the same time as the installation. This not only facilitates final system inspection replacements, but also allows operations to replace equipment and systems immediately should they fail at any time.

Innovative Elements **–** ECSI successfully integrated legacy, government furnished equipment, as well as leap-ahead technology, into a comprehensive integrated security system solution. ECSI integrated existing (legacy) sensors into the new Command and Control Display Equipment (CCDE), which included Taut Wire, Microwave & FPS2 for an existing protected area. ECSI also integrated new GFE equipment which included MSTAR radar, PSRS radar, and WSTI Thermal Imager into the new CCDE to provide a complete security system. The Automated Access Control Point hardware was integrated into an access control system that was part of the CCDE. As part of the initial design documents ECSI provided SV-1, SV-2 and SV-6 drawing for this project in accordance with DOD Architecture Framework (DODAF) guidance.

Project Evaluation

Quality **–** ECSI is an ISO 9001:2008 Registered Company and used documented tools, procedures and practices to prepare Design & Engineering documents in accordance with ISO certification standards. During fabrication, ECSI worked with the customer and Base Operations to complete acceptance testing in its factory in New Jersey. This allowed for all components to be tested before shipment and installation on the site. At the site, ECSI completed installation, further testing, and final commissioning and training of the operational system. ECSI also provided its Depot Services, which follows the system and provided maintenance as required. Warranties were provided in compliance with the contract.

Effectiveness of Management/Business Relations **–** ECSI, as the prime, developed and provided complete training to the Security Forces Operators and Administrators and the Government contracted Maintenance Contractor for the maintenance of the systems installed. ECSI also specified sufficient spare parts (5% to 8%) shipped to the site at the same time as the installation. This not only facilitates final system inspection replacements, but also allows operations to replace equipment and systems immediately should they fail at any time.

ECSI's design strategy was to allow Tinker to maintain all current or legacy equipment in the control centers while new systems were being installed. ECSI developed a systems integration plan and submitted it to the Government for approval at 35% design. Much of the Base legacy systems were in disrepair and not performing properly. ECSI tested and upgraded the legacy and government furnished systems to reduce nuisance and false alarms and to facilitate integration with the new systems. New system integration was completed in coordination with ECSI's integration team on schedule.

Timeliness – ECSI completed a site survey and developed a schedule based on the condition of the existing infrastructure and security systems, as well as the weather conditions at the site. ECSI developed and completed a risk management plan to evaluate manufacturing, testing, and installation. Its risk model considered harsh weather conditions, including severe winds, and addressed potential delays in the ability to complete the necessary grading and infrastructure as well as any lost materials. Most equipment, including spare parts, were shipped early and stored in a secure environment for prompt installation. Material deliveries were scheduled so that embeds and anchor bolts, etc., would be erected/installed first. Once the tie-ins to the conduit and cable pulled, ECSI delivered the panels and finish equipment for installation in a clean and finished environment. When outdoor installation was hampered by weather conditions, ECSI worked overtime to make up progress. The project was completed on schedule.

Compliance with Labor Standards – ECSI complied with all Base labor, security, and construction requirements.

Compliance with Safety Standards – ECSI developed a site-specific Health & Safety Plan that was enforced by site safety and supervisory personnel on site. ECSI site management held daily safety meetings to discuss safety equipment, personal protective clothing, and safety processes specific to the task of the day. There were no safety incidents on this project.

Small Business Utilization – ECSI had two subcontractors, both local, small businesses. A SB electrical contractor executed electrical work and replacement of cable, as well as the minor mechanical and civil work. Development of training documentation was subcontracted to a WOSB firm.

Challenges Encountered/Corrective Actions Taken –

Challenge: ECSI's design strategy was to allow Tinker to maintain all current or legacy equipment in the control centers while new systems were being installed. But, much of the Base legacy systems were in disrepair and not performing properly.

Solution: ECSI developed a systems integration plan and submitted it to the Government for approval at 35% design. ECSI tested and upgraded the legacy and government furnished systems to reduce nuisance and false alarms and to facilitate integration with the new systems. New system integration was completed in coordination with ECSI's integration team on schedule.

Challenge: The power signal was direct burial, not suitable for the new system.

Solution: ECSI had to remove all the direct burial and put everything in conduit. By phasing the work effectively, ECSI was able to maintain schedule. ECSI installed new conduit and wiring before existing security system was taken off-line to avoid impact of existing operations.