

# DETENTION, JAILS, AND CORRECTIONAL SECURITY

CONSULTING • DESIGN • ENGINEERING SERVICES



STRATEGY + SPECIFICATIONS + TECHNOLOGY

# Firm Profile

Consulting | Design | Engineering Services



## Leaders In Design

Professional Systems Engineering, LLC (PSE) is a national leader in providing consulting, design, engineering, and construction services for justice, corrections, detention centers and jails. With hundreds of projects completed and \$5 billion in design currently underway nationally and worldwide, our client base of Owners, Architects, and Design-Build teams have counted on us to deliver detailed construction documents and specifications within budget and no change orders. We provide critical systems design, engineering, consulting services, and planning critically matched to operations in a safe and secure environment for security, life safety, communications, detention operations and lighting control.

## Client Focused Expertise

We offer state-of-the-art designs in perimeter fencing and detection, modern control centers, IP video surveillance, touch screen control systems, and wireless communications to maintain the highest levels of safety and security on each of our client's sites. We provide detention hardware specifications and schedules following ANSI 863-04 for detention security openings. By combining our design and hardware expertise, PSE is the only independent firm to specialize in providing specifications, drawings, and consulting in the fields of security, perimeter design, life safety, communications, and lighting for detention operations. PSE provides our clients the decision making skills required to ensure a successful design, from understanding detention vs. corrections functions to behavioral needs. We offer a complete solution to design teams and owners.

PSE is committed to providing the tools and building designs for our clients to function safely, securely, and successfully. We have the capability of providing emergency planning, policies, procedures, and training tailored to the individual needs of each client. This allows our team to work one-on-one with all involved parties to develop systems and practices that aid in the ultimate success of every project and every team.

## Innovative Leaders in Staffing, Procedures, and Training

Going beyond critical systems commissioning, our team prepares life safety plans, evacuation planning instructions, and detailed exit maps. For security we establish post orders and incident response procedures, master keying system design, and on-site training for security operations and evacuation exercises. Opening a \$100+ million facility requires a transition team with irrefutable experience. PSE delivers solid recommendations and site specific practice manuals/training.



# Detention, Jails & Corrections

PSE has been providing justice operations, hardware consulting, fencing, detention applications, and safety of staff, visitors, and those in secure detention for over 35 years. Rarely does a firm integrate physical and electronic applications so seamlessly.

## Consulting, Analysis, and Design

- Master Planning
- Security Architecture
- United Nations Compliance
- Programming and Security Narratives
- Staff, Visitor, Inmate Workflow
- Reception/Intake Analysis and Recommendations
- Low, Medium, Maximum, Super-Max, Segregation, Forensic, Geriatric, and Isolation Design Experience
- Risk Analysis
- Threat Assessment
- Perimeter Security, Detection, and Response

## Hardware Consulting

- ASTM Grade 1-4 Detention
- UL Tool-Attack Resistance
- ANSI/BHMA 1-3
- Magnetic Locking
- Strikes/Bolts/Locks
- Hollow Metal Design
- Polycarbonate Evaluation
- Motorized Locking
- Secure Openings Consulting
- Electronic Controls
- Life Safety Operations

## Communications

- Intercom and Paging
- Nurse/Patient Communication
- Network Design
- Video Visitation
- Tele/Data Communications
- Master Television/MATV Distribution
- Satellite Reception/Distribution
- Trunked 800 MHz Public Safety
- WAN/LAN/WIFI Design/Exhibit Presentation System Control

## Fencing/Perimeter Security

- Site Layout/Planning
- 3-D Digital Rendering
- 3-D Fly-Overs
- Chain Link/Mini Mesh/Custom
- Welded Mesh/318 Concertina
- High Performance Barriers
- Virtually Impenetrable Design
- Footer Design
- Seismic/EMF/Line/Optical Sensing
- Unique 'Capture Zone' Designs
- Physical Security Analysis
- Hard/Soft Secure Site Design

## Detention Control

- Industrial Grade Central and Distributed Processing Design
- Programmable Logic Control
- Mirror-Processing
- Redundant PLC Control
- Graphic Membrane Displays
- Operational Flow/Control Strategies
- Control Consoles, Cabinets, and Enclosures
- Custom Wood/Stainless Millwork

## Monitoring

- Touch Control Systems
- Voice Message Systems
- Video Surveillance/CCTV Systems
- Perimeter Security Systems
- Integrated Monitoring/Control
- Wireless Personal Alarms
- Wireless Tracking

## Life Safety

- I-2 Conditions for Institutional
- Shelter-in-Place
- Fiber Optic Fire Alarm
- Safety Program Development
- Redundant Cellular Site Monitoring



# High Security Correctional Facilities, Jails & Justice Facilities



## Security Solutions

The PSE team has over three decades of professional experience in providing consulting and engineering services for security, life safety, and communication systems. Our expertise is in security master plan development, comprehensive security surveys, risk and needs assessments, security operations and procedures evaluation and program development, systems design and engineering, as well as a full complement of services for individual system components.

## Balanced Programs

We offer a balanced team approach by combining the expertise of professionals representing physical hardware and systems, operations, policies, and procedures.

The PSE team is comprised of security management specialists, security risk experts and planners, communication specialists, engineers, and CAD designers. Backed with the resources of a multi-disciplined team, PSE provides our clients with well-coordinated security programs that fully integrate physical security hardware components with procedures and operational aspects.

## Consulting and Design Capabilities


By decreasing risk, increasing safety, preparing for emergencies, and planning for continuity of business, PSE provides the continuity of management through design and maintenance that creates increased value and return-on-investment. We reduce operational losses, improve site security and safety, and mitigate potential risks from within the employee base or from outside infiltration. We create enterprise-wide strategic security, communication, and safety plans that incorporate our responsibility as a partner to provide valuable skill sets for well-coordinated successful programs.

## Risk Mitigation to Contingency Planning

Our staff includes individuals with highly technical skill sets, as well as executive security managerial capability. Experience includes a wide variety of markets and roles in detention, correctional, forensic, law enforcement, and institutional venues. PSE has experienced security managers, fire safety managers, on-line law enforcement experience, field electronics experience, network security, and communications experience including secure cyber protection, business continuity, and executive security management training.

# North Branch Correctional Institution

Maximum Security Prison Designs & Commissioning

 Cumberland, Maryland



*Our security and wireless duress alarm designs were recently featured on National Geographic's "MegaStructures" television program as the "most advanced security in the United States" as well as in "Maxim" magazine.*

*Our high security fencing and perimeter design is considered the "Best-Practice" model throughout the world.*

Professional Systems Engineering, LLC provided corrections master planning services, systems design for support services/site connectivity study and schematics; construction documents, administration, management; as well as certification testing/inspection and commissioning services for this 60-acre site. PSE spent 7 months meticulously reviewing and verifying/testing system and device functionality.

The security and communications systems are integrated with redundant computers and programmable logic control systems. This allows flexible operation through multiple local and central consoles that may be activated as needed.

Life safety monitoring and evacuations system are fiber connected and computer controlled for meeting Maryland State Fire Marshal and NFPS regulations.

Operator interfacing is through touch control terminals and graphic control panels. Site-wide communication is provided through multi-mode and single-mode fiber optic networks. Communication within buildings is through structured category and specialized cabling.

Our security and wireless duress alarm designs were recently featured on National Geographic's "MegaStructures" television program as the "most advanced security in the United States" as well as in "Maxim" magazine.

Our high security fencing and perimeter design is considered the "Best-Practice" model throughout the world.

## Services Provided

### Site-wide Design

- High security fencing and gates
- Wireless RF duress/panic alarm
- Site-wide control/fire alarm monitoring
- Satellite television distribution system
- Maximum security design
- Detention door and gate control
- All site lighting designs

### Integrated Systems

- Lighting control
- Video surveillance and digital recording
- Intercom/paging/nurse call
- Multiple perimeter intrusion systems
- Sophisticated Perimeter detection with RF mobile maps
- Communication systems for various buildings

# NYC DOC Rikers Island Correctional Facility - West Perimeter

 New York, NY



**\$15+ million**  
**perimeter project**  
**involving 6 miles**  
**of linear perimeter**  
**detection sensors**  
**and fencing was**  
**added to the west**  
**site with design**  
**documents prepared**  
**to New York City**  
**design standards.**

Professional Systems Engineering, LLC (PSE) provided correctional programming, space planning design, impact studies, threat/assault reduction, and PREA impact and served as the perimeter security, perimeter monitoring center, and site infrastructure design consultant on the \$6.8 million renovation for Rikers Island West Perimeter. PSE's involvement with the Rikers Island started with an evaluation of the contract documents related to the previous perimeter security improvement project at the request of the NY DDC to determine if the equipment provided met contract requirements. As a result of our recommendations this initial project was expanded to include testing of the shaker devices currently used at Rikers Island and investigation of alternative perimeter security systems. The final west perimeter design includes a 1.8-mile perimeter, 1.8 miles of razor ribbon integrated detection system, with dozens of microwave zones, 1.8 miles of duct bank, 40 miles of cables, and 1500 feet of PVC coated rigid conduit.

## Services Provided

### Perimeter Security Electronics

- Zone layout
- Detection device mounting
- Fence detection systems
- Microwave approach systems
- Gate monitoring
- Alarm monitoring system

### Perimeter Fencing and Infrastructure

- Fencing system coordination
- Gate system coordination
- Razor ribbon/ barbed wire detection
- Dog run/ "No-Mans" Land treatment
- Ductbanks
- Alternative conduit systems

### Control Center

- Integrated multi-system alarm monitoring
- Ergonomic console layout
- Integration of new and existing equipment
- Graphical user interface (GUI) design
- System servers
- Security network
- Touch screen computers
- Report printers

### Systems Evaluation, Contract Evaluation and Systems Testing

- Contract documents review
- Contractor performance review
- Site survey
- Device testing
- Perimeter system investigation
- Migration planning

# SCI Phoenix

Security, Communications, Life Safety & Technology Services

📍 Skippack, Pennsylvania



**SCI Phoenix East and West is a replacement project for one of the largest state correctional facilities. The expansion is the keystone to a major statewide rehabilitation and enlargement to handle a growing incarceration trend in Pennsylvania. Over \$40 million in systems were specified by PSE for the proposed \$431 million site allocation.**

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Professional System Engineering, LLC served as the physical security, perimeter security, security electronics, detention hardware, technology, life safety, and communications consultant for the preparation of Bridging Documents through 2nd re-bid for the new \$350 million PA DGS SCI Phoenix. The facility was constructed in a design/build effort at the site of the existing SCI Graterford with a proposed capacity of 3,830-bed facility. There is a 1,915-bed, maximum-security prison; and a 1,915-bed, medium-security prison. The two male correctional facilities featuring one shared Administration/Centralized Service Building - Subdivides into two separate sections of the facility – “East” and “West” and share a secure perimeter and support services building, but have their own master control rooms and integrated security systems. There is also a new Female Transitional Unit which includes: An independently fenced, full-service building containing 192 dormitory-style beds. SCI Phoenix is a replacement project for one of the largest state correctional facilities.

PSE also provided consulting services for the DGS DOC during the design-build phase to provide a performance specification for the video surveillance design to an IP-based system with redundant networking and infrastructure.

PSE assisted DOC and facility maintenance during the construction phase to provide consulting services for assessment and troubleshooting. This allowed for the systems startup and shakedown to be successfully completed for occupation of the facility.

## Services Provided

### Physical Security

- Security zoning
- Impact/attack ratings
- Hardening analysis
- Control center design

### Security Electronics

- PLC control systems
- Touchscreen control
- Digital video
- Intercom/paging
- Wireless duress
- Watch tour

### Perimeter Security

- Security fencing
- Multiple detection systems
- Vehicle sallyport
- Site digital video
- Security lighting/controls

### Detention Hardware

- Pneumatic locking system
- Swing door detention locks
- Sliding door detention locks
- Gate locks

### Communications

- Data communications
- Voice communications
- Satellite TV distribution
- Inmate phone infrastructure
- Video conferencing

### Life Safety

- Shelter-in-place scenarios
- IBC conditional use group IV
- NFPA life safety I-3 analysis
- Integration requirements



# PA DGS State Correctional Institutions Prime

Security Design & Engineering Consulting Services

📍 Pennsylvania



*PSE provided services that encompass the replacement and upgrade of perimeter intrusion detection systems (PIDS), new fencing, and PLC/Video Surveillance integration at multiple Pennsylvania State Correctional Institutions.*

Professional Systems Engineering, LLC (PSE) provided engineering, design, consulting, and construction administration services that encompass the replacement and upgrade of perimeter intrusion detection systems (PIDS), new fencing, and PLC/Video Surveillance integration at multiple Pennsylvania State Correctional Institutions.

## SCI Facilities

- SCI Frackville
- SCI Cambridge Springs
- SCI Greene
- SCi Laurel Highlands
- SCI Mercer
- SCI Fayette
- SCI Muncy
- SCI Cresson
- SCI Retreat
- SCI Forest
- SCI Chester
- SCI Phoenix (Sub)

PSE performed independent, unbiased evaluation and provided input regarding system selection for each site. Our team designed and engineered Perimeter Fencing, Fence Mounted PIDS, Taut Wire Intrusion Detection Systems (TWIDS), terrain following volumetric detection systems, buried detection systems, microwave volumetric systems, PLC and Video Surveillance Integration, monitoring and alarm systems, and mobile mapping.

PSE provide construction administration monitoring progress in the field, reviewed shop drawings and submittals, and ensured the Contract performed their work to the requirements of each project.

## Services Provided

### Perimeter Security

- Perimeter Fencing
- Evaluation of PIDS for upgrade and replacement
- Zone layout
- Provided design services for electronic intrusion detection systems at the perimeter of the facility
- Multiple detection systems
- Security lighting/controls
- Gate monitoring

### Control & Monitoring

- Alarm monitoring system
- Integration to existing video surveillance systems
- Integrated new intrusion detection systems with existing intrusion detection systems
- Integrated new intrusion detection system with existing
- Surveillance system
- UPS power backup
- Graphic display touchscreen

### Communications

- Universal cabling distribution system
- Inside/outside plant communication
- IP Video Integration Connectivity



# Trumbull County Adult Justice Center

## Security System Upgrade

📍 Warren, Ohio



*The control system that will be provided for the Trumbull County Adult Detention center will be non-proprietary, easy to maintain, off-the-shelf, control system that does not tie the Facility to a particular manufacturer. This allows flexibility and room for expanding and maintaining the system and should keep overall lifetime costs of the system down.*

Professional Systems Engineering (PSE) Professional Systems Engineering (PSE) was engaged to provide for replacement and upgrades to existing control and jail technology systems at the Trumbull County Adult Detention Center. PSE provided design, engineering, bid support, and construction administration services to deliver reliable, effective, and ergonomic jail technology systems upgrades. The control system that will be provided for the Trumbull County Adult Detention center will be non-proprietary, easy to maintain, off-the-shelf, control system that does not tie the Facility to a particular manufacturer. This allows flexibility and room for expanding and maintaining the system and should keep overall lifetime costs of the system down.

The Center is actually two detention facilities in one: The Minimum Security Jail (M.S.J.) and the Full Service Jail (F.S.J.). The entire building is a 180,000 SF facility housing approximately 314 inmates. Services for this facility requires the upgrade, replacement and integration of master control centers, local control stations, intercom and paging, duress, video surveillance, master clock and guard tour replacement.

### Services Provided

#### Control System

- Door and gates control/monitoring with PLC integration
- Cell control/monitoring
- Redundant monitoring stations
- Touchscreen control system in each housing unit
- Touchscreen control in each master control for emergency take-over
- Redundant programmable logic controller (PLC) systems
- Self-healing fiber optic network
- New security intercom and paging head-end system
- Housing unit console replacement
- UPS back up for equipment

#### Detention Hardware and Openings


- Replacement of malfunctioning electro-mechanical locks
- New electro-mechanical locks
- Detail hardware evaluation, coordination, and specifications
- Replacement of detention doors and frames where required

#### Video Surveillance

- IP upgrade and integration

# Travis County Correctional Center & Jail

## Security Control Systems Upgrades & Renovation

 Austin, Texas



*PSE, having vast engineering experience in smoke detection, smoke control systems, and life safety code requirements (national, state, and local requirements), was selected by the Sheriff's Office of Travis County.*

*PSE provided design and engineering services to deliver cutting edge results on which all future control system work throughout Travis County is now being based.*

Professional Systems Engineering (PSE) was engaged by Travis County to provide for replacement and upgrades to existing control systems and detention hardware several housing facilities at the Travis County Correctional Complex and Jail. PSE provided design and engineering services to deliver cutting edge results on which all future control system work throughout Travis County is now being based.

These projects included multiple facilities housing maximum security male and female inmates and medium security male inmates. Services for these multiple facilities required the upgrade and replacement of three master control centers, eleven local control stations, intercom and paging systems, and detention hardware. Our design services enabled the Travis County to save over \$200,000 and receive state-of-the-art control system that are non-proprietary, easy to maintain, and provided a safe and secure environment at each facility.

### Services Provided

#### Control System

- Door and gates control/monitoring with PLC integration
- Cell control/monitoring
- Redundant monitoring stations
- Touchscreen control system in each housing unit
- Touchscreen control in each master control for emergency take-over
- Redundant programmable logic controller (PLC) systems
- Self-healing fiber optic network
- New security intercom and paging head-end system
- Housing unit console replacement
- UPS back up for equipment

#### Detention Hardware and Openings

- Replacement of malfunctioning electro-mechanical locks
- New electro-mechanical locks
- Detail hardware evaluation, coordination, and specifications
- Replacement and repair of existing detention openings and sliding devices

#### Video Surveillance

- IP upgrade and integration

# Cape May County Correctional Facility

## Security & Communications

📍 Cape May County, New Jersey



*This new facility has become the Command Center for county-wide security operations to act independently from the jail command center. The dual purpose of the facility is further defined by requiring two (2) separate command centers. One is dedicated to the correctional facility and the other serves the county wide security operations.*

Professional System Engineering, LLC (PSE) provided design, engineering, and consulting services for security and communications. The new \$37 million, 85,000 SF facility houses 450 inmates includes both male and female. This new facility has become the Command Center for county-wide security operations to act independently from the jail command center. The dual purpose of the facility is further defined by requiring two (2) separate command centers. One is dedicated to the correctional facility and the other serves the county wide security operations. The building includes a courtroom, infirmary, receiving, processing, inmate storage, day rooms, dormitories, holding areas, sallyport, laundry room, kitchen, command center, visitor stations, and other secure correctional facility areas. The building houses the County Sheriff Administration functions to include offices, meeting room, multi-purpose room, employee gym, staff dining/break rooms, locker rooms, IT rooms, and storage areas.

### Services Provided

#### Security

- Access control
- CCTV
- Network video recorder
- Visitor screening
- Security intercom
- Duress alarm
- Detention area controls
- Wireless Duress or Watch Tour
- Perimeter security

#### Central Control

- Door control/monitoring of security doors and gates
- Room control/monitoring
- Redundant monitoring stations
- Programmable Logic Control (PLC)
- Graphical User Interface (GUI)
- Access control

#### Data/Telecommunications

- Telephone
- Data network
- Structure cabling system

#### Audio-Visual/Communications

- Training A/V with projector & sound
- Inmate televisions
- Paging
- Intercom



# Lexington-Fayette County Detention Center

Communications & Advanced Systems Consulting

📍 Lexington, Kentucky



*A \$60 million facility, built in 18 months, required an entire universal wiring infrastructure. A complete RFP for communications was prepared for the equipment budget of \$1.6 million and infrastructure costs of over \$400,000.*

Professional Systems Engineering, LLC provided systems design and consulting services for control, communications, and infrastructure.

This 400,000 SF facility encompasses multiple county/city jurisdictions in the Lexington, Kentucky area. Because the design/build contracts awarded approached a cost of \$60 million, the owner and planners obtained expert fire, tele/data communications, audio, multimedia, and video consulting provided by PSE. The project was lauded as a complete success.

## Services Provided

### Communications

- High speed network design
- Master control center design
- Satellite TVRO facilities
- Data telecommunications design
- Computer architecture design
- Digital TV studio/broadcast design
- Large bandwidth digital data/telecom/video/WAN design for integration to County Government
- Data/telecom/video RFP preparation valued at \$2.3 million

### Systems

- Twenty-four video conference stations with ISDN, H.323 and SONET ring capabilities to city courts
- Advanced tele/data/video and information technologies facilitation and engineering using gigabit layer 3 switching
- Digital studio television and recording systems for site-wide distribution and training

# Fort Peck Detention Center

## Correctional Security & Tele/Data Infrastructure Design

📍 Poplar, Montana



***PSE's correctional security designs provide a complement of systems that work together to help ensure security and safety for inmates and correctional staff. The synergy of various electronic and physical security measures provides the highest level of security possible within the requirements and budgetary constraints of each individual facility. Fort Peck's new detention center constitutes a vast improvement over the previous lock-and-key facility.***

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PSE provided design and consulting services for the design and construction of a new, \$14 million detention center for the Fort Peck Tribes in Poplar, Montana. PSE designed the electronic security systems including IP video surveillance, intercom, paging, staff duress, perimeter intrusion detection, and access control. These systems were integrated for streamlined control from touchscreen control workstations. Physical security was also included in PSE's design, encompassing fencing and detention hardware. PSE also designed the tele/data infrastructure for the facility's enterprise IT network and phone system, including telecom room layouts and structured cabling systems. Design was formulated to work in conjunction with the facility's architecture and geographical location to promote effective security for the safety of both detainees and staff alike.

### Services Provided

#### Electronic Security

- IP video surveillance
- Perimeter intrusion detection
- Intercom
- Paging
- Access control
- Central control room design
- Systems integration and touchscreen control

#### Physical Security

- Perimeter fencing
- Gates
- Detention locks
- Detention door hardware
- Door monitoring

#### Tele/Data Infrastructure

- Equipment room (MDF/IDF) layouts
- Electrical and heat loads
- Structured cabling and conduit
- Network switches and other hardware

# Communication Technologies

PSE has extensive experience providing complete Tele/Datacom infrastructure and information technology systems planning, design and engineering services. With over 35 years of procurement support services, we have developed RFP's in communications reflecting over \$20 million in purchases, installation and deployment -- all on schedule.

## Wireless Data/Voice Systems

- Wi-Fi
- WiMAX
- Cellular Data
- Microwave Systems
- 700/800/900 MHz

## Wireless Network Applications

- Mesh Networks
- Point-to-Point
- Wireless Backhaul
- Wireless LAN/WAN
- Hot Spots
- Wireless Network Infrastructure Planning

## Wireless Network Equipment

- Autonomous Access Points
- Lightweight Access Points
- Wireless Network Switching
- Wireless Network Management
- Wireless Network Security Data

## Data Network Types

- LAN
- WAN/MAN
- High-rise Networks
- Multi-Building Campus Networks

## Network Communication Applications

- VoIP
- Unified Messaging
- Video Conferencing
- Video Delivery and Storage
- VPN

## Network Integrated Building Security

- IP CCTV Systems
- IP Intercom Systems
- Networked Access Control Systems
- Network Integrated Building Security

## Infrastructure Planning

- Structured Cabling
- Campus Wide Infrastructure
- City/County Wide Infrastructure
- Wireless Backhaul
- Aerial Cabling Systems
- Ductbank Systems

## Telecom Service Planning

- POTS
- ATM
- T-Carrier
- DSL
- ISDN
- Cable Modem
- Multi-Tenant VoIP


## Data Centers

- Storage Networking
- Data Back-up Systems
- Critical Power Systems
- Network Monitoring
- Server Consolidation
- VLAN Coordination
- Legacy Systems Migration
- Virtualization of Servers



# Chatham County Detention Center

## Security & Telecommunications

 Savannah, Georgia



*The Chatham County Detention Center expansion project added total number of inmate beds to 2,360 and added 400,000 SF to the facility. PSE provided security and telecom consulting and construction administration services for this project.*

Professional Systems Engineering, LLC provided security and telecommunication consulting and construction administration services for the Chatham County Detention Center. The expansion project added 400,000 SF and bring the total number of inmate beds to 2,360. Major renovations include the administration building, medical, kitchen, laundry and warehouse facilities. A work-release center is planned along with further renovation which will accommodate the need for any possible future expansions.

Throughout, PSE has provided construction administration services to ensure the facilities new electronic security systems, perimeter intrusion detection systems (PIDS), perimeter fencing, and tele/data communications systems worked and had been installed as designed. The second phase which included Unit 5, PSE designed an expansion to the newly upgraded electronic security systems, PIDS, perimeter fencing, and tele/data systems.

This project ultimately provided improved inmate screening through the use of hands-off sterile screening processes, over 900 video surveillance cameras, 767 card readers, complete integrated door control and monitoring from Central and Local Control areas, and improved security communications throughout the building, and a new perimeter fence including multiple layers of perimeter intrusion detection systems.

### Services Provided

#### Security/Enforcement

- Door and gates control/monitoring with PLC integration
- Cell control/monitoring
- Redundant monitoring stations for central control, support/command personnel and housing unit stations
- Complete security intercom and paging system
- CCTV surveillance
- Access control systems
- Wireless/wired duress systems
- Digital video recorder equipment and networked video servers
- Perimeter security and fencing

#### Communications

- Communications infrastructure
- Main point of presence coordination
- Wide area of network interface
- Distribution backbone design
- Consulting for switching and servers
- IDF/MDF tele/data room equipment layout
- Tele/data communications structured cabling system
- MATV/CATV system
- Video visitation

# Merrimack County House of Corrections

## Security & Communications Systems Design

📍 Boscawen, New Hampshire



*The Merrimack County House of Corrections project consisted of 240 beds and 80,000 SF of new construction, plus 20,000 SF of renovations, for a total of \$25 million in construction. It was a Design Build project completed on time and within budget, resulting in a state-of-the-art county jail.*

The Merrimack County House of Corrections project consisted of 240 beds and 80,000 SF of new construction, plus 20,000 SF of renovations, for a total of \$25 million in construction. It was a Design Build project completed on time and within budget, resulting in a state-of-the-art county jail.

Professional Systems Engineering, LLC as part of the Owner's team, provided RFP documents to establish quality guidelines, design and program data, operational narratives and space program input/room data schedule coordination for Merrimack County New House of Corrections.

### Services Provided

#### Security Systems

- Central control room design and console design
- Security equipment room layout and rack requirements
- Door, gate control system requirements through PLC/graphical user interface computer system
- Miscellaneous control requirements including inmate telephone, lighting, and utilities control
- Video surveillance system requirements, including digital video recording
- Intercom/paging fully integrated with control video surveillance, access control system
- Wired/wireless duress system requirements

#### Telephone and Data Communication System

- Telecommunication digital PBX system
- Infrastructure for tele/data/fax/video distribution system
- Telephone instruments
- Coordination for Virtual Private Network (VPN)
- All data switches and hubs networked to Owner's T-1 channel bank
- Video visitation/conferencing system
- Video arraignment
- Inmate telephone system coordination
- UPS coordination

# Van Cise-Simonet Detention Center

Security and Communication Design & Consulting

📍 Denver, Colorado



***The new The Van Cise-Simonet Detention Center serves pre-sentenced inmates remanded to custody by the courts. PSE provided security and communication design and consulting services for the new four-story, 461,000 SF, \$160 million facility with a 1,500 bed capacity. The Van Cise-Simonet Detention Center achieved LEED Silver certification.***

Professional Systems Engineering, LLC provided security control system design and consulting services for this new state-of-the-art detention center project. The security system for the detention center will be comprised of control and monitoring of inmate movement, doors and gates, video, intercom and paging, duress, lighting, and other functions as required by the institution. PSE's responsibilities included planning, design, and ushering in standards of practice relating to the state-of-the-art detention facility's control and security system. Our services included design and consulting on the following systems:

- Control systems including the interface computers and programmable logic control system graphical user interface for floor control, housing units, intake/booking, medical, and central courthouse holding
- Control system design consisting of multi-tier design of network PLC and touchscreen work station computers for local and floor controls networked to multi-generator central control system-based ground dual-core Raid servers
- Graphical User Interface (GUI) touch screen designs
- IP video surveillance system design including recording, virtual switching, network storage arrays, and analytics
- CCTV, intercom/paging, and control systems
- Design and construction documentation including system and integration diagrams, GUI screens, console layouts, and selected specification sections
- Operational sequence documents for all computer systems
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# Essex County Jail

## Security & Communication Systems Design Services

 Newark, New Jersey



*One of the largest single jail complexes in the United States received over 50,000 twisted pair and fiber connections for digital PBX, switched networks, high security touch control communications, and advanced video-over-twisted-pair transmission encompassing over 500 video links.*

Professional Systems Engineering, LLC provided design and engineering for cutting edge technologies for this newly constructed \$416 million facility with a capacity to house more than 2,200 inmates. PSE prepared systems design and consulting services for the four-story, one million square foot facility.

One of the largest single jail complexes in the United States received over 50,000 twisted pair and fiber connections for digital PBX, switched networks, high security touch control communications, and advanced video-over-twisted-pair transmission encompassing over 500 video links.

The \$11 million electronics award combined with \$10 million in infrastructure and \$11 million in detention hardware made this project one of the most impressive security designs for a new facility.

### Services Provided

#### Planning/Design/Life Safety

- Jail, correctional, and justice consulting
- Planning and professional estimating services
- Security and communications site planning
- 2,800-bed facility site security and communications master plan
- Life safety analysis of cells for NFPA/UL approval
- Detention control, security, door security, and fencing
- CCTV surveillance including several digital systems

#### Communications

- CCTV surveillance including several digital systems
- Site MATV and CATV distribution
- Communications including outside plant services
- Wireless RF staff duress/panic alarm with emergency response
- Telecommunications including all infrastructure layouts
- Commissioning and close-out services
- Planning for 75 touch control stations
- Biometric access control
- Combination biometric and digital video watch tour

# Plan & Code Review



The firm has been providing Plan and Code Review since 1980s, having served the Philadelphia High Rise Fire Board and Licensing and Inspection. Our cross training of engineering disciplines allows a thorough platform for protection and continuity of operations even under the most serious natural or man-made events.

## Life and Property Safety


- Fire and smoke detection, containment, and suppression systems are the first line of defense in today's building codes. No era in history has so remarkably changed the expectations and actions demanded of our fire protection, smoke and fire alarm systems, water pumps, emergency lighting, and exiting signage systems. Demands of code enforcement require a thorough and practical knowledge of systems, operation, and human interaction to demonstrate full compliance with legislative acts that bind a community with safe construction practices.
- Electrical systems and subsystems, power generation, grounding, and lightning protection systems now present enormous undertakings for the typical agency or department that has the knowledge, but lacks the manpower, to thoroughly inspect for unpredictable emergency events. It is just these events that challenge chances of blackouts and power losses at a site where personal safety is of utmost importance.

## Mechanical Standards and Regulations

- Compliance with ASHRAE, NSA, local codes, and health standards predicates planning, evaluation, and support for smooth construction compliance. Especially difficult to analyze are control systems that can promote harmful or even fatal bacteriological or environmental conditions in buildings that had too little inspection by knowledgeable, trained technicians. Individual team members apply best practices to minimize the probability of conditions leading to restricted occupancy or closure.

# Ocean County Jail

Security, Communications, & Life Safety

 Toms River, New Jersey



*The Ocean County Jail is representative of over 100 corrections and jail projects engineered by PSE. The architect chose PSE because of the first systems designs successfully completed with them in 1993.*

The Ocean County Jail is representative of over 100 corrections and jail projects engineered by PSE. The architect chose PSE because of the first systems designs successfully completed with them in 1993.

Professional Systems Engineering, LLC provided electronic security, master control center, communications, and fire protection/fire alarm/life safety services, consulting, design, engineering, construction administration and commissioning services. Renovations including the existing medium and maximum three-story structures. The new addition added additional housing to include 400+ beds plus numerous workplace and program space upgrades. Communication infrastructure provides proper distribution of voice/data/video/fax service, MATV, and video visitation systems.

## Services Provided

### Security/Enforcement

- Door and gates control/monitoring with PLC integration
- Detail hardware evaluation, coordination, and specifications
- Cell control/monitoring
- Redundant monitoring stations for central control, support/command personnel and housing unit stations
- Complete security intercom and paging system
- CCTV surveillance
- Wireless/wired duress systems
- Digital video recorder equipment and networked video servers
- Roof sensors/detection systems

### Communications

- Communications infrastructure
- Main point of presence coordination
- Wide area of network interface
- Distribution backbone design
- Consulting for switching and servers
- IDF/MDF tele/data room equipment layout
- Tele/data communications structured cabling system
- MATV/CATV system
- Video hearing/arraignment

### Fire Protection/Fire Alarm/Life Safety

- Architectural review and documentation of life safety requirements
- Complete addressable fire alarm system
- Building review/analysis/evaluation/design of fire suppression systems
- Water supply analysis

### Radio

- RF survey
- Analysis and coverage calculations
- Design of distributed antenna system
- Procurement assistance with State contract
- Construction troubleshooting



# Bayside State Prison

Correctional Security Design &  
Project Management Services

📍 New Jersey



*A more secure and dependable system was required to minimize the possibility of a security breach, or escape while improving correctional officer safety. PSE was selected over a field of nine qualified firms for outstanding experience in renovations for justice facilities.*

Professional Systems Engineering, LLC provided expert security and electrical design services for the removal and replacement of 40-year old cell doors, locks, and cell locking systems in Housing Units A-F at Bayside State Prison (total of 504 cells.)

Special phasing requirements and lead-based paint abatement procedures were implemented to minimize the effect the renovations had on prison operations. PSE performed all surveying and documentation of existing conditions, consulting, design, cost estimating, construction administration, commissioning, and close-out services.

## Services Provided

### Locking System Replacement

- Replacement of existing hollow-metal steel sliders
- Replacement of existing cover box system
- New full travel pneumatic door locking
- Pneumatic emergency release system
- Compressed air system including compressors, storage, tanks, manifolds, rigid and flexible piping

### Control System

- Touchscreen control system in each housing unit
- Touchscreen control in central control for emergency take-over
- Redundant programmable logic controller (PLC) systems
- Self healing fiber optic network
- Housing unit console replacement
- Secure console enclosure for correctional officer protection during operations
- UPS back up for equipment

### Project Management Services

- Bi-weekly construction meetings
- Reviewed all contractor submittal and schedules
- Reviewed all contractor invoices and change-order request
- Commissioning of contractor

# Virginia Beach Correctional Center

Security, Communications & Life Safety Design & Commissioning

📍 Virginia Beach, Virginia



*Virginia Beach Correctional Center follows a theme of southern architecture based on Colonial Williamsburg's brick and white mould cornice treatment. This facility keeps in step with its founding fathers goals: that architecture has a lasting effect on society and the person; and both are in need of good, practical design.*

Virginia Beach Correctional Center follows a theme of southern architecture based on Colonial Williamsburg's brick and white mould cornice treatment. This facility keeps in step with its founding fathers goals: that architecture has a lasting effect on society and the person; and both are in need of good, practical design.

A two-phase 4-year project included a new housing and program space structure while all systems were renovated in the existing facility during Phase II work.

Security, data/telecommunication, and fire alarm systems for a new 330,000 SF, 5-story, 500-bed addition to this corrections facility were completed as Phase I work for \$8 million.

## Phase I:

- Jail, correctional and justice consulting
- Planning and professional estimating services
- Consulting, design, engineering, and construction administration
- Life safety/fire alarm system including proprietary monitoring, digital network, prison grade, network interfacing
- Touch screen network, CCTV, cell locking, and door control
- Intercom, paging, card access, digital recording, audio and wired duress system
- Control room design/layout: master control and 12 housing units
- Commissioning and close-out services
- The renovation of security and fire alarm systems in two existing facilities and interfacing to new building system was the second phase valued at \$7 million.

## Phase II:

- Replacement of two existing control centers into one new Master Control Center (MCC)
- New PLC system with fiber optic network and PC touch screens
- Motorola radio system on existing city-wide wireless network
- Digital intercom/paging systems interfaced to new integrated system

# Life & Property Safety

PSE provides a wide range of services for life safety and property protection including consulting, engineering, system design, construction administration, inspections and testing, and other related services. PSE designs fire and life safety systems that protect our clients from loss from fire, security issues, and other emergency situations.

## Code Compliance/Evaluation

- IBC Architectural Evaluation
- Building Fire Code Analysis
- Fire and Life Safety Analysis
- JCAHO Standards Compliance Including Statement of Conditions
- Life Safety Plans
- Intellectual Property and Patent Claims
- Product Proof-of-Performance Evaluations and Claim Management

## Life Safety

- High-Rise Compliance
- Fire Alarm
- Mass Evacuation
- Biological Hazards
- Chemical Agents
- Command Centers
- Stair Pressurization
- Smoke Containment
- Smoke Evacuation
- Smoke Detection
- Addressable Monitoring
- Evacuation Plans
- Brigade Manuals
- Commissioning and Testing

## Alarm/Evacuation

- Audio Evacuation
- Wireless Mass Notification
- Bio/Chem Hazard
- LEL/LFL Alarms
- Nuclear Alert
- Audio Messaging
- Pager Integration
- Synthesized Response

## Detection Systems

- Pharma and Electronics Fabrication
- Process Gas/Detection and Alarm Systems
- Bio/Chemical Introduction
- Organic/Inorganic Gases
- Smoke/Heat/Fire/Incipient
- Explosion Inerting

## Fire Protection

- Wet Sprinkler
- Dry Sprinkler
- Standpipes
- Fire Pumps
- "Green" Inerting Gases
- Carbon Dioxide
- Purge Control
- Pre-Action/Single and Double Interlock
- Deluge

## Systems Management

- Systems Integration
- Egress Plans Production
- Proprietary Monitoring
- Radio Control/Transmission
- Dispatch/Control Center
- Door Control
- Digital CCTV
- Card Access
- Environmental Monitoring
- Intrusion Detection
- Hardware Compliance
- Correctional Systems
- Parking Controls
- Fencing Systems
- Motion Detection
- Elevator Control
- Systems Testing

# Philadelphia Industrial Correctional Center

## Communications & Security Systems Improvements

📍 Philadelphia, Pennsylvania



**Philadelphia Industrial Correctional Center (PICC) houses most of Philadelphia's "Close Custody" inmates. PSE implements systems to improve safety of this facility.**

Philadelphia Industrial Correctional Center (PICC) houses most of Philadelphia's "Close Custody" inmates. Professional Systems Engineering, LLC implements systems to improve safety of this facility. PSE provided security consulting, hardware consulting, and engineering services as prime consultant to the city of Philadelphia, including systems studies, master planning, design, bid, and construction administration for this 946 bed, 13 housing unit facility.

Planning services included site analysis, program of user requirements, locking systems study, communication systems, and Security System Master Planning (SSMP). The SSMP included consoles, electronics, communications, control, life safety, operations, scheduling, phasing and cost estimates. The most recent phase expanded the scope of the project to include a complete facility wide video surveillance and communication system replacement.

The scope of services included phasing of multiple projects to allow renovation of entire facility while maintaining maximum occupation levels. Currently housing units F1, G1, H1, F2, G2, H2, J and K and their associated auxiliary control consoles and facility control consoles are completed.

### Services Provided

#### Cell Locking and Life Safety Upgrades

- PLC cell locking controls
- PC touch screen graphical maps
- Door Hardware
- UPS back-up power
- Upgrades and control slider doors
- Life Safety Code 101 Compliance
- Detention Hardware
- Duress System
- IP Video Surveillance
- Intercom


#### Information Technology

- Inside/outside plant
- Communication distribution
- Universal cable distribution system
- Network infrastructure
- IP telephone system
- Site-wide networks



# Western Correctional Institution (WCI)

## Site-wide Security Communications & Fire Alarm

 Cumberland, Maryland



*PSE designed the original, virtually inescapable fence, which was so successful, that it is the prototype used by other designers for future projects.*

Professional Systems Engineering, LLC (PSE) provided planning, design, and construction documentation for this 60-acre site. PSE also provided corrections planning services, systems design for support services; a site connectivity study and schematics; construction documents, administration, integration management; as well as commissioning testing/inspection services. PSE maintained continuity by servicing the site for over 10 years.

The security and communications systems were integrated with redundant computers and programmable logic control systems. They allow flexible operation through multiple local and central consoles that may be activated as needed. Operator interfacing is through touch control terminals and graphic control panels. Site-wide communication is provided through multi-mode and single-mode fiber optic networks. Communication within buildings is through structured category and specialized cabling. PSE designed the original, virtually inescapable fence, which was so successful, that it is the prototype used by other designers for future projects.

### Services Provided

#### Control/Monitoring

- Security and communication
- PLC based design
- Site-wide control
- Site-wide fire alarm monitoring
- Satellite television
- Door and gate control
- Lighting control
- Video surveillance
- Site-wide paging
- Panic alarm

#### Design

- Fencing system
- Master control security design
- Site-wide intercom
- Master planning
- Virtually inescapable fence system
- New perimeter monitoring/ alarm and touch controls
- New 42" LCD perimeter displays
- Largest RF mobile annunciators ever designed for a single site

# 3rd Party Security Commissioning Inspections



Our engineers perform testing for security systems, critical power plants, life safety systems, and generators on mission critical sites. Our commissioning efforts save clients time and money.

## Inspection Services

- Whether code evaluation and enforcement issues or homeland security standards conformance, collaborative efforts of our staff with client and contractors produce safe and effective plans to allow judicious and respectful use of facilities for licensing and inspection. Compliance with local, state, and national codes as adopted is assured with our field-tested staff.

## Systems Testing and Commissioning

- Our staff holds advanced educational degrees and provides years of experience with building and site systems. Projects having significant complexities, as well as those costing over \$400 million, have been tested and commissioned, yielding smooth occupancy transition with minimal readjustment

## Commissioning Services and Inspection Services

- K-rated access/perimeter fencing
- Linear intrusion detection
- Volumetric intrusion detection
- Intelligent video assessment
- Fire alarm/smoke detection
- Access Control/alarm monitoring
- Command/control/communication
- Emergency evacuation/mass notification
- Control systems – pneumatic and electro-mechanical

## 3rd Party Programs

- Deployment of gear and equipment in most technical facilities demands conformance to testing and certification programs for assurance of capital expenditures, life cycle cost maximization, least cost maintenance programs, operational requirements, and warranty response issues. Certification of contractors include 3rd party review of life safety, security, data and communications, acoustical, and noise and vibration control issues.

# NYC DOC Rikers Island & Borough Facilities

## Security Video Surveillance System

 New York, NY



**PSE acted as the security specialist for Video Surveillance Systems from the Facility Survey phase through development of Bid Documents and Design Modifications including the construction and commissioning phases of the project as requested. PSE also provided coordination of all efforts related to the Video Surveillance Systems.**

Professional System Engineering, LLC acted as the security specialist for Video Surveillance Systems from the Facility Survey phase through development of Bid Documents and Design Modifications including the construction and commissioning phases of the project as requested. PSE also provided coordination of all efforts related to the Video Surveillance Systems.

PSE provided survey, design, and construction administration services for Video Surveillance system upgrades to seven (7) existing NYC DOC facilities, including:

- Otis Bantum Correctional Center (OBCC)
- Eric M. Taylor Center (EMTC)
- Rose M. Singer Center (RMSC)
- North Infirmity Command (NIC)
- Manhattan Detention Complex (MDC)
- Vernon C. Bain Center (VCBC)
- Brooklyn Detention Complex (BKDC)

PSE performed a complete survey of all existing facilities to evaluate existing conditions and location new camera, equipment, and monitoring locations prior to the design of new camera locations and other system upgrades. The project will result in the installation of more than 7,700 new cameras.

### Services Provided

#### Video Surveillance System

- Internet protocol (IP) cameras
- Fixed and PTZ cameras
- Interior and exterior camera coverage
- Network Requirements
- Equipment room requirements
- Coordination of power requirements
- Monitoring locations

# Saint Elizabeths Hospital

## Physical & Electronic Security Systems Design & Commissioning

📍 Washington, DC



*PSE's specialized experience in forensic facilities includes the first psychiatric institution in America, Friends Hospital, as well as the nation's first federal psychiatric facility, Saint Elizabeths. Our experience in secure environments, while being sensitive to humane needs, sets our firm apart from ordinary design firms.*

Professional Systems Engineering, LLC's (PSE) specialized experience in forensic facilities includes the first psychiatric institution in America, Friends Hospital, as well as the nation's first federal psychiatric facility, Saint Elizabeths. Our experience in secure environments, while being sensitive to humane needs, sets our firm apart from ordinary design firms.

Saint Elizabeths Hospital was established in 1855 as the Government Hospital for the insane. It was the first and only federal mental facility with a national scope. The complex is situated on more than 300 acres, and in the 1940s, housed over 7,000 patients. Professional Systems Engineering, LLC staff established functional requirements for a new hospital security system including the grounds, and determined equipment re-use and integration with existing and new systems. The hospital now houses 600 patients.

PSE staff established secure designs and functional requirements for the new hospital security systems including the grounds, and determined equipment re-use and integration with existing and new systems. The new 440,00 SF hospital on 49 acres now houses 600 patients.

Our team recommended design techniques including "Crime Prevention through Environmental Design" (CPTED) principles for the site and parking areas. PSE staff prepared the security portion of the overall Pre-design Report containing functional requirements for the security system encompassing alarm sensors and access control points, communications, surveillance, lighting, personnel processing, package screening and contraband detection, along with requirements for system interfaces, redundant/backup power and security system expansion.

PSE provided full design documentation and commissioning services for the following scope:

### Services Provided

#### Perimeter Security Designs

- Security fencing and gates
- Redundant perimeter detection systems
- Security lighting
- Site CCTV

#### Physical Security Designs

- Turnstiles
- X-ray package screening
- Personal search equipment

#### Electronic and Security Designs

- Access control and monitoring
- CCTV and digital video recording
- Security intercom
- Personal duress
- Central control console

#### Life Safety Consulting Services

- Fire safety plan
- Fire evacuation plan and signage
- Keying grouping and Hierarchy planning
- Training



# High Security Correctional Facilities, Jails, & Justice Facilities

**Electromechanical/Pneumatic Openings,  
Locks & Physical Security**



Professional Systems Engineering's talented staff have years of experience in BHMA hardware, ASTM Grade 1 openings, electric solenoid, electro-mechanical half cycle and full cycle locks, pneumatic sliders, high security locks, and UL Listed attack hardened detention hardware. The diversity of physical security assignments have included automated anti-ballistic revolving openings, optical and physical turnstiles, fire/smoke-rated openings, K-rated sallyports, inertial vehicle barrier systems, "SCIF" enclosures, anti-terrorism protection, and physical fencing and attack-rated barriers/assemblies.

Our staff is skilled in all aspects of openings, especially meeting strict fire code requirements and the highest security protected portals. Our experience includes large pneumatic door/lock projects, complete hardware specifications, "SETS" documentation, and critical site commissioning and testing to rigid "anti-terrorism, hardened inmate, and gang" standards of practice.

## **Project Examples of openings, locking, and physical security consulting**

- The \$135 million Saint Elizabeths Hospital in Washington, DC required detention locking, egress keying, life safety planning, fire alarm management, master keying systems, and key control. Full documentation, user program, training, and commissioning included high security fencing, sallyports, and gate controls.
- The \$350 million State Correctional Institution - Phoenix required detention and openings consulting including attack resistance, life safety consulting, perimeter, physical security barrier specifications/narratives, detention locks/doors/gates/sliders, and complete maximum security fencing, sallyports, and K-rated barriers.
- The \$45 million Niagara Falls Police and Courts Facility included detention locks, openings, construction administration, and closeout.
- The State of New Jersey Bayside State Prison's \$2 million detention openings renovation occurred while fully occupied replaced old openings with new pneumatic sliders, cell locks, and related hardware and controls.
- Philadelphia Industrial Corrections Complexes 10-year pod-by-pod renovation included significant lock and detention openings upgrades to meet stricter security goals while automating all operable doors/gates to meet the highest standards.
- San Francisco's \$135 million Jail #3 required PSE to provide substantial documentation and commission the locking systems, openings, detention frames, hollow metal and related locks, and controls.
- Central State Hospitals \$300 million new forensic and civil psychiatric facility in Petersburg, VA required maximum security electronic design with life safety integration for shelter in place, perimeter fencing and protection, wireless alarms, wired and wireless communication infrastructure/networks.