

Automated Vehicle & Personnel Access Control System

CASE STUDY & INTEGRATED ENGINEERING LOGIC MANDATE

Project Mandate:	High-Risk Multi-Layered Mantrap Airlock Architecture (Basement Zone)
System Class:	Active Deterrent & Interlocking Infrastructure Control
Core Strategy:	Non-Lethal Defense Integration & Electronic Fire Failover Protocol

Executive Summary

Retrospective Trading has successfully engineered, deployed, and commissioned a high-reliability, multi-tier Basement Interlock System integrated with automated perimeter safety controls. Tasked with mitigating unauthorized vehicle-borne threats, tailgating incidents, and security breaches within a high-risk subterranean environment, this blueprint establishes a fail-safe interlocking infrastructure framework. By bridging physical access control systems with programmable industrial logic, we guarantee enterprise-grade reliability and comprehensive asset protection without structural vulnerability.

Core Architectural Attributes & Operational Logic

- Interlocking Access Point Logic (Mantrap Configuration):** The environment utilizes sequential macro-mantrap methodology. Activation of the primary motorized roller shutter door or the internal sliding gate requires a verified authentication token. Hardware and software interlocks guarantee that the secondary door cannot unlock until the primary baseline gate is completely closed and locked, preventing simultaneous openings and eliminating multi-person tailgating vulnerabilities.
- Breach Detection & Early Warning System:** Any unauthorized physical forced opening of either access point without a verified token instantly triggers a system-wide localized intrusion alarm. Upon breach detection, a critical, hardware-driven 10-second countdown protocol is automatically initiated to secure the immediate zone.
- System Reset & Biometric Override:** The initialized countdown sequence and audible alarm can only be safely aborted by authorized operators. This requires executing a formal system reset or disarm procedure via a secure, dedicated biometric interface prior to countdown expiration.
- Active Deterrent & Non-Lethal Defense Activation:** If the 10-second countdown expires completely without a valid biometric override, the environment activates its terminal defensive perimeter lockdown. The

immediate interior airlock areas are flooded with a pressurized, non-lethal aerosolized payload to immediately neutralize, blind-inhibit, and fully incapacitate the unauthorized perpetrators.

- **Hardened IP Infrastructure & Network Resiliency:** A high-resilience network backbone connects all edge readers, lock sensors, and system overrides seamlessly. Automated reporting protocols continuously perform system health checks, instantly flagging and diagnosing offline edge devices.
- **Emergency Integration & Life Safety Fail-Safes:** The interlocking logic is directly linked to the facility's Electronic Fire Detection and life safety infrastructure. In the event of an active fire alarm, the system automatically triggers an immediate global fail-safe release of all locks, guaranteeing unobstructed rapid evacuation routes.

The Retrospective Advantage: Holistic System Integration

Established in 1998, Retrospective Trading leverages over 25 years of technical expertise to address complex infrastructure challenges. The true triumph of this deployment lies in our unique ability to synthesize physical infrastructure engineering with sophisticated industrial protocols. By custom-programming edge devices to communicate via unified automation layers, we deliver a tamper-resistant, self-healing environment that ensures our clients stay one step ahead of both physical and operational risks.