

Building Resilience Beyond the Perimeter

Recognizing Engineered Physical Protection Systems as Critical Risk-Reduction Infrastructure

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Executive Summary

Governments across Canada continue to invest heavily in cybersecurity, emergency preparedness, climate adaptation, critical infrastructure resilience & business continuity. Yet one category of engineered infrastructure is not always considered alongside other resilience investments, despite its potential to reduce both the likelihood & severity of physical loss.:

Engineered Physical Protection Systems (EPPS).

Whether protecting healthcare facilities, emergency operations centres, water treatment plants, schools, transportation assets or municipal buildings, engineered protective opening systems represent an opportunity to shift public-sector thinking from responding to losses toward preventing them.

This paper proposes a broader framework for recognizing Engineered Physical Protection Systems as an important component of public-sector resilience, supporting organizations in protecting people, preserving operations & reducing disruption before it occurs.

The Changing Nature of Public Risk

Governments today face a more complex risk environment than ever before.

Organizations must prepare not only for traditional security concerns, but also:

- Extreme weather
- Wildfire
- Flooding
- Civil unrest

- Organized theft
- Infrastructure failures
- Fire events
- Supply chain disruptions
- Increasing operational dependence on critical facilities

These risks share one common characteristic: Every hour of downtime has consequences that extend far beyond property damage.

When municipal facilities close, emergency services are disrupted.

When healthcare infrastructure fails, patient care suffers.

When utilities are compromised, entire communities are affected.

The conversation is no longer simply about replacing damaged assets. It is about maintaining essential public services.

From Loss Recovery to Loss Prevention

Traditional property insurance has focused on restoring organizations after a loss. Modern resilience strategies increasingly recognize that preventing losses creates greater value than simply recovering from them.

The most effective insurance claim is the one that never has to be filed.

This principle aligns with broader public-sector objectives:

- protecting public assets
- minimizing service disruption
- reducing taxpayer costs
- improving operational continuity
- strengthening community resilience

The challenge becomes identifying infrastructure investments that meaningfully reduce organizational risk.

What Are Engineered Physical Protection Systems?

For this discussion, **Engineered Physical Protection Systems (EPPS)** refer to engineered risk-reduction infrastructure designed to prevent, limit or contain physical losses through the protection of vulnerable building openings, critical assets & essential infrastructure.

Examples of EPPS may include:

- Fire-rated shutters
- Fire curtains
- Smoke containment systems
- Security shutters
- Security grilles
- Flood barriers
- Impact-resistant protective systems
- Other engineered protective opening systems designed & certified for specific risk scenarios

These systems should always be evaluated based on their intended application, engineering, certifications & demonstrated performance.

Not every system addresses every hazard, but together they represent an important category of infrastructure designed to improve resilience.

Beyond Physical Security

Historically, protective opening systems have often been viewed primarily as security products. That perspective no longer reflects the role many engineered systems now play.

Today, these systems contribute to:

- Fire compartmentation
- Smoke containment
- Critical infrastructure protection
- Facility hardening
- Business continuity

- Asset preservation
- Environmental protection
- Emergency preparedness

They are increasingly integrated into the operational resilience strategies of organizations responsible for delivering essential public services.

Why This Matters for Government

Governments routinely evaluate investments through the lens of risk reduction.

Examples include:

- cybersecurity controls
- backup power systems
- fire suppression systems
- emergency communication systems
- crime mitigation infrastructure

Each represents infrastructure designed not simply to respond to an incident, but to reduce its consequences.

Engineered Physical Protection Systems should be considered within this same conversation.

When appropriately engineered, installed & maintained, these systems can become part of a layered resilience strategy that helps reduce operational disruption before it occurs.

A Collaborative Opportunity

Recognizing Engineered Physical Protection Systems should not be viewed as a manufacturing initiative or a procurement exercise.

Rather, it represents an opportunity for collaboration between:

- Government
 - Risk professionals
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- Architects
- Facility managers/asset managers
- Insurers
- Engineers
- Manufacturers
- Installers
- Emergency management professionals
- Business continuity specialists

Together, these stakeholders can provide education on how these engineered protection measures contribute to organizational resilience.

Measuring What Matters

Future work should focus on developing evidence that helps quantify the contribution of EPPS to organizational resilience.

Potential areas of study include:

- Reduction in insured losses
- Business interruption avoided
- Protection of critical assets
- Operational continuity
- Incident response outcomes
- Lifecycle performance
- Maintenance effectiveness
- Cost-benefit analysis
- Public-sector case studies

Developing a common evidence base will allow organizations to make more informed investment decisions.

Rethinking Resilience

Public-sector resilience is increasingly recognized as an integrated discipline. Cybersecurity protects information. Emergency management protects response capability. Business continuity protects operations.

Engineered Physical Protection Systems help protect the physical environments that enable all of these functions.

Resilience should not be viewed as separate initiatives competing for resources. It should be understood as an interconnected strategy for protecting communities.

Looking Forward

Canada has an opportunity to lead a broader discussion around recognizing engineered physical protection as a meaningful component of organizational resilience.

Rather than asking how quickly organizations can recover after disruption, we should increasingly ask:

How can we reduce the likelihood & severity of disruption in the first place?

Engineered Physical Protection Systems represent an important & often overlooked layer within a comprehensive resilience framework.

By bringing together government, insurers, engineers, manufacturers & practitioners, Canada can begin building a common understanding of how physical infrastructure contributes to stronger communities, more resilient organizations & more sustainable public investment.

Protection with Purpose

Resilience is strongest when it is designed into the built environment—not added after a loss occurs. As governments continue investing in climate adaptation, emergency preparedness & critical infrastructure, Engineered Physical Protection Systems deserve consideration alongside the many other measures that help communities withstand disruption.

Recognizing, evaluating & measuring these systems is not simply about protecting buildings. It is about protecting the people, services & communities that depend on them.

About the Author

Gill Roussel is the Director of Operations at Security Shutter Ltd., working with public & private sector organizations to develop practical engineered protection solutions that support facility resilience, business continuity & critical infrastructure protection. Through collaboration with manufacturers, engineers & risk professionals, she advocates for recognizing engineered physical protection as an integral component of modern resilience planning.

Further Reading

- Canada's National Adaptation Strategy
 - Public Safety Canada – National Strategy and Action Plan for Critical Infrastructure
 - Public Safety Canada – Critical Infrastructure Resilience resources
 - ISO 22301 – Business Continuity Management Systems
 - ISO 31000 – Risk Management Guidelines
 - National Building Code of Canada
 - NFPA 80 – Fire Doors and Other Opening Protectives
 - NFPA 105 – Smoke Door Assemblies and Other Opening Protectives
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References

1. **Government of Canada.** (2023). *Canada's National Adaptation Strategy: Building Resilient Communities and a Strong Economy*. Government of Canada.
 2. **Public Safety Canada.** *National Strategy and Action Plan for Critical Infrastructure*.
 3. **Public Safety Canada.** *Critical Infrastructure Resilience Strategy*.
 4. **International Organization for Standardization (ISO).** *ISO 22301: Security and resilience — Business continuity management systems — Requirements*.
 5. **International Organization for Standardization (ISO).** *ISO 31000: Risk Management — Guidelines*.
 6. National Fire Protection Association (NFPA)
 7. **National Research Council Canada.** *National Building Code of Canada*
 - a. **NFPA 80** – *Standard for Fire Doors and Other Opening Protectives*
 - b. **NFPA 105** – *Standard for Smoke Door Assemblies and Other Opening Protectives*
 - c. **NFPA 101** – *Life Safety Code*
 - d. **NFPA 5000** – *Building Construction and Safety Code*
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Disclaimer

This paper is intended to encourage discussion regarding resilience planning, risk reduction & engineered physical protection. References to standards, codes & guidance documents are provided for contextual purposes only & should not be interpreted as endorsements of any specific product, manufacturer or installation. Individual systems should always be evaluated based on their intended application, engineering, certification, testing & compliance with all applicable codes & standards.

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