Creating Safe Environments
Integrating Planning, Design and Physical Security

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SPEAKERS

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LEARNING OBJECTIVES

1. Identify approaches to assembling a multi-disciplinary team of experts when planning with security in mind.

2. Attain baseline level of knowledge so that planners can effectively engage security practitioners into teams and projects.

3. Understand the risk assessment process used throughout the security industry.


5. Describe how security procedures can be used on a temporary basis until more thorough infrastructure measures can be planned and installed.
ABOUT AE WORKS

Integrated and Diverse Services

WE TAME BUILDING COMPLEXITIES
A single-source solution that leverages the power of diversity and collaboration to add value throughout project life cycle.

ARCHITECTURE
ENGINEERING
PLANNING + STRATEGY
SECURITY RISK MANAGEMENT
PROJECT SERVICES
1. WHAT IS A SAFE ENVIRONMENT?

2. Safe environment planning: A Multi-Disciplinary Approach

3. Safe environment design

4. Security?

5. Design

6. Planning

7. Randoms

8. Q&A
An environment in which the primary use or purpose can be realized with minimal distraction due to concern for loss of life or property.
1. What Is A Safe Environment?

2. SAFE ENVIRONMENT PLANNING: A MULTI-DISCIPLINARY APPROACH

3. Safe environment design

4. Security?

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8. Q&A
SAFE ENVIRONMENT PLANNING

• A Multi-Disciplinary approach is most effective:
  ✓ Cost effective
  ✓ Truly integrated
  ✓ Less obtrusive
  ✓ Design balanced
  ✓ More credible
  ✓ Sustainable

• It is never too early to engage each discipline

PLANNING
- Policies
- Land Use
- Zoning
- Approvals

PHYSICAL SECURITY
- Risk Assessment
- CPTED

DESIGN
- Urban Design
- Architecture
- Engineering
- Landscape Design
SAFE ENVIRONMENT PLANNING

- Typical Planning Considerations:
  - Context/Community/Location
  - Controls - i.e. Zoning, Land Use, Overlays, etc.
  - Review of similar projects in terms of location or land use
  - Community feedback/politics

- Observations:
  - Basic municipal approvals and influential community conversation
  - Security often neglected until permitting/ licensing/ occupancy
SAFE ENVIRONMENT PLANNING

Why does this matter?

• Reviews by municipal planners
• Better engagement of consultants and knowing when they are necessary
• Better urban design plans
• Inform applicants or clients of security integration into new or existing places
AGENDA

1. What is a Safe Environment?
3. SAFE ENVIRONMENT DESIGN
4. Security?
5. Design
6. Planning
7. Randoms
8. Q&A
SAFE ENVIRONMENT DESIGN

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

Manipulate the built environment in order to reduce the incidence and/or fear of crime

1960s
- Jane Jacobs (1960s) – Death and Life of Great American Cities
  - Urban planning at the time was actually increasing crime in cities

1970s
- C. Ray Jeffery (1970s) – Crime Prevention Through Environmental Design
  - CPTED
  - Opportunity, motivation, risk, history
- Oscar Newman (1970s) – Defensible Spaces
  - See and be seen, culture of intervention

1980s
- Wilson and Kelling (1980s) – “broken windows theory”
  - Maintenance
SAFE ENVIRONMENT DESIGN

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

Natural Access Control
- Spatial definition
- Minimize entry possibilities
- Locate entries strategically

Natural Surveillance
- Clear fields of view
- Trees/ Bushes – 7/3 Rule
- Window positioning
- Break areas
- Lighting

Territorial Reinforcement
- Signage, fencing
- Builds off of the previous two concepts
- Legitimate users of a space have a sense of ownership and become active participants in security

Maintenance
- Shrubs growing over windows
- Dilapidated fences
- Broken Windows theory
SAFE ENVIRONMENT DESIGN

Passive Measures

- Safes, vaults, reinforced walls
- Door hardware
- Cameras
- Lighting
- CPTED access control and surveillance

Active Measures

- Guards
- Cameras
- Alarms
- CPTED territorial reinforcement
EXERCISE

RISK – Burglary & Robbery

Identify **PASSIVE** measures that can increase the security of the building
EXERCISE

RISK – Burglary & Robbery

- Remove the vault exterior door
- Add wall and door between dispensary area and staff area
- Have one bathroom open to dispensary area only
- Add a door between entrance and waiting area
EXERCISE

RISK – Burglary & Robbery

Identify some **ACTIVE** measures that can increase the security of the building.
EXERCISE

RISK – Burglary & Robbery

- Alarms, cameras, electronic access control
- Zone the vault and garage separately from the dispensary
- Hire an armed guard instead of a receptionist
- Coordinate for periodic police patrol during off hours
AGENDA

1. What is a Safe Environment?
3. Safe Environment Design
4. SECURITY?
5. Design
6. Planning
7. Randoms
8. Q&A
WHAT IS SECURITY?

Risk management
WHAT IS SECURITY?

Consequence (Asset) \times Probability (Threat) \times Vulnerability = Risk
SECURITY

ASSETS
- People
- Mission critical equipment and systems
- Mission critical support systems
- Other equipment

CRITICALITY
- Mission failure
- Mission degraded
- Inconvenience
SECURITY

THREAT

Anything that can have a negative impact on operations

- Natural – floods, winds, landslides, etc.
- Man made – inadvertent vs intentional
  - Inadvertent – power failure, water outage, hard drive crash
  - Intentional – criminal and terrorist
SECURITY

THREATS

• Ordinary decent crime (ODC): theft, burglary, assault
  • Statistics and trends allow for mostly accurate prediction
  • Statistics provide a partial picture
  • Reasoning provides the rest
• Terrorism: bombings, workplace shootings
  • Statistics are meaningless
  • Certain events can be an indicator
  • Targeting likelihood is best from a design perspective
SECURITY

- ODC – statistics are readily available
- Predictions are possible
- *Example property crime map* for a 3 mile radius centered on a VA hospital
Terrorism is not predictable. That’s why it works.

Best possible course of action is to assess facility’s likelihood of attack.

One method is the KSM methodology (Norman)
SECURITY

• The target fits the strategic objectives of the organization.
• Mass casualties are possible.
• The target will attract the media and is on “media friendly” ground (visually accessible).
• The target is of economic importance or represents an economically important sector of the economy.
• The target is of cultural importance to the constituent community of the victims and where possible is also culturally important to the terrorist organization’s constituent community.
• The target is vulnerable.
• There is a high probability of success of the planned attack scenario.
• A successful attack against this target could result in increased recruiting and fund-raising for the terrorist organization.
Vulnerability

Protection is needed – a threat is present and the hazard can affect the asset
Current protection is not present or inadequate

This is the only variable in the risk equation that can be manipulated

Passive and Active measures CPTED

But what about deterrence?

Deterrence is manipulating the perceived vulnerability of an asset. It does not stop crime. Determined adversary will likely not be deterred.
| Consequence (Asset) | X | Probability (Threat) | X | Vulnerability | = | Risk |
AGENDA

1. What is a Safe Environment?
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How do we apply this in Design?
SAFE ENVIRONMENT DESIGN
ASCARI 1983 BEIRUT BARRACKS

- PETN with butane enhancement carried on concrete bed to direct blast upwards
- Crashed through multiple barriers and penetrated building envelope
- Explosion lifted all floors from support columns before total collapse (4 story building)
- 241 victims killed
SAFE ENVIRONMENT DESIGN
TIMOTHY MCVEIGH 1995 MURRAH BUILDING

- 5,000 lbs of ammonium nitrate and nitromethane
- Delivered in a Ryder rental
- Mixed at a rest stop
- 168 killed, 680 injured
SAFE ENVIRONMENT DESIGN

WHAT DID WE LEARN?

Assets – high value, high consequence

Threat – vehicle bomb, determined adversary - high

Vulnerability – buildings are vulnerable to structural failure when bombs are detonated nearby - high

Risk – high
SAFE ENVIRONMENT DESIGN

WHAT DID WE DO?
WHAT DID WE LEARN?

Assets – can’t manipulate

Threat – can’t manipulate

Vulnerability

<table>
<thead>
<tr>
<th>Distance</th>
<th>Barriers</th>
<th>Structural blast mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>– reduce blast pressure on structure</td>
<td>– enforce distance</td>
<td>– reduce effects of pressure</td>
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CASE STUDY
KHOBAR TOWERS BACKGROUND

Built in 1979 by the Saudis

Was mostly unoccupied until 1990/1991
- Little maintenance
- Not modernized

Risk assessment performed in early 1996 as follow on to a 1995 assessment

Measures implemented (partial list)
- Improved vehicular access control
- Placement of jersey barriers around perimeter
- Removal of vegetation from perimeter fence

Measures not implemented
- Acquisition of additional land in a civilian-owned parking lot adjacent to the perimeter and approximately 80 feet from two apartment buildings in the compound
- Installation of anti-fragmentation film on windows
CASE STUDY

KHOBAR TOWERS BACKGROUND

Detection
• Approx. 10PM sentries noticed a tanker truck park close to the edge of the parking lot. The driver was picked up by a car which left at a high rate of speed

Evacuation
• Sentry supervisor notified OPS center of the threat and requested evacuation order over the PA system
• Sentry supervisor immediately began banging on doors. In 2 ½ min, the first 3 floors were evacuated, with the bulk of personnel in stairwells moving down

Explosion
• 15 killed inside building, 4 killed outside building
• Hundreds injured primarily by glass fragmentation spall
• PA system evacuation order not issued
CASE STUDY
1996 KHOBAR TOWERS

- 5,000 lbs of plastic explosive – later analysis revealed a blast force of approximately 20,000 pounds of TNT
- Configured as shaped charge in a fuel tanker truck
- 19 Killed, 498 wounded
PRACTICAL APPLICATION
SAFE ENVIRONMENT PLANNING

BUILD YOUR BUSINESS CASE IN TERMS OF THE RISK EQUATION

**Assets and criticality** – these come from the users and organization leadership
- Criticality includes mission impact and cost

**Threats**
- Some users will be able to give a portion of the threat data
- Crime data
- External support – Police, Emergency Manager, consultants

**Vulnerability**
- External support – Police, Emergency Manager, consultants

Risk = Consequence (Asset) X Probability (Threat) X Vulnerability
SAFE ENVIRONMENT PLANNING

UNDERSTAND RISK

Develop passive environmental measures

Value of passive measures – little maintenance required

When properly designed, passive measures reduce the number of active measures needed

Fill gaps with active measures

Staff

Cameras

Alarms
AGENDA

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## ZONING AND DEVELOPMENT

### Diversity is key – you need engaged residents
- Bedroom communities are bad for CPTED

### No eyes on the street during the daytime – you'll need alarms and cops
- Around during the day
- Notice everything
- Call the police about everything

### Retirees – don’t price them out
- Taking kids to and from the playground all through the day
- Incredibly aware of any potential threat to their child

### Stay at home parents – don’t price out the single income family
- Be mindful of the tax impacts
- Include attractive public spaces

### Responsible development/ renewal
- Gardens/ front yards/ porches
- Eyes outside during appropriate months

### You need more outdoor space – get the engaged residents to look outside
SAFE ENVIRONMENT PLANNING

A Multi-Disciplinary Approach that integrates Security design early in the planning process yields the following outcomes:

✓ Improved cost effectiveness and economics
✓ Balancing Safety, Functionality, and Aesthetics
✓ Sophistication From the Start
✓ Increased Credibility with Reviewing Agencies
✓ Appropriate Integration with Public Policy
✓ Futureproofing
THANK YOU!

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