CREATING SAFE ENVIRONMENTS INTEGRATING PLANNING, DESIGN AND PHYSICAL SECURITY



LEARNING OBJECTIVES



- 1. To learn approaches and value in assembling **a multi-disciplinary team of experts** when planning with security in mind.
- 2. To emerge with a baseline level of knowledge so that planners can effectively **engage security practitioners** into teams and projects.
- 3. To understand the **risk assessment process** used throughout the security industry.
- 4. To become familiarized with the principles of CPTED—Crime Prevention Through Environmental Design.
- To understand how security procedures can be used on a temporary basis until more thorough infrastructure measures can be planned and installed.

ABOUT AE WORKS

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Integrated Services Taming Project Complexities



AGENDA



1 What is a safe environment? 2 Safe environment planning: A Multi-Disciplinary Approach 3 Safe environment design 4 Security? Design 5 6 Planning Randoms 7 Q&A 8

WHAT IS A SAFE ENVIRONMENT?

An environment in which the primary use or purpose can be realized with minimal distraction due to concern for loss of life or property.

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- Typical Planning Considerations
 Often driven by others/generalities
 - 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 are concluding.
 - Security often neglected until permitting/ licensing/ occupancy.



- A Multi-Disciplinary approach is the most effective approach:
 - Cost effective
 - Truly integrated
 - Less obtrusive
 - Design balanced
 - More credible
 - Sustainable
- It is never too early to engage on the conceptual ideas from each discipline



- Why does this matter?
 - Relevant 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



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CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

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

- Jane Jacobs (1960s) Death and Life of Great American Cities
 - Urban planning at the time was actually increasing crime in cities
- 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
- Wilson and Kelling (1980s) "broken windows theory"
 - Maintenance



CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

Natural Access Control

- Spatial definition
- Minimize entry possibilities
- Locate entries strategically

Natural Surveillance

- Clear fields of view
- Window positioning
- Break areas
- Lighting

Territorial Reinforcement

- 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

Passive Measures

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

Active Measures

- Guards
- Cameras
- Alarms
- CPTED territorial reinforcement



Risk – burglary and robbery

* Take some time and identify some PASSIVE measures that can increase the security of the building





Risk – burglary and robbery

- Remove the vault exterior door
- Add wall and door between dispensary area and staff area
- Add a door between entrance and waiting area
- (Not drawn) Have one bathroom open to dispensary area only





Risk – burglary and robbery

 * Take some time and identify some ACTIVE measures that can increase the security of the building





Risk – burglary and 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



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What is Security?









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ASSETS

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

CRITICALITY

- Mission failure
- Mission degraded
- Inconvenience



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





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



- ODC statistics are readily available
- Predictions are possible
- This is a crime report for a 3 mile radius centered on a Veteran's Affairs hospital
 - Rape and assault are explainable by the proximity to a college.
 - Theft is somewhat explainable, but requires further analysis
 - There is no explanation for the elevated level of armed robbery







- 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)



- 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.



DETERMINING VULNERABILTY

- Create asset-threat pairs
- Accidental damage/ vandalism
 - POP vulnerable. Not locked up. In the same closet as brooms and mops.
 - Plotter vulnerable. Not in a secure room.
- Flooding
 - POP- vulnerable. Connects in the basement which takes water when the stormdrains back up
 - Plotter not vulnerable. On 3rd floor.
- Theft
 - POP vulnerable. Not locked up.
 - Plotter not vulnerable. Weighs 500 lbs. Cannot be moved stealthily.







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How do we apply this in 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





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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



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

WHAT DID WE DO?



WHAT DID WE DO?

- Assets can't manipulate
- Threat can't manipulate
- Vulnerability
 - Distance reduce blast pressure on structure
 - Barriers enforce distance
 - Structural blast mitigation reduce effects of pressure



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



KHOBAR TOWERS - INCIDENT

Detection

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

Evacuation

- Sentry supervisor notified the OPS center of the threat and requested evacuation order over the PA system
- Sentry supervisor then immediately began banging on doors, issuing evacuation order. 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



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







KHOBAR TOWERS – EFFECTS OF PLANNING

Detection

• Detection enabled by both positioning of sentries and removal of vegetation from perimeter

Evacuation

- Training on seriousness of evacuation led to personnel actually following evac order
- Failure to have process in place for rapidly issuing evac order led to PA not being used

Explosion

- Installation of jersey barriers interfered with blast wave propagation
- Anti-vehicle measures forced the attackers to chose the parking lot which increased standoff distance
- Failure to install anti-fragmentation film left many people injured



How do we apply this?





Threats

- Murder
- Robbery
- Rape
- Assault
- Burglary
- Theft
- Vehicle theft



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Threats

- Violent crime
- Burglary

Vulnerabilities

- Violence in parking lot
 - Lack of detection capability
 - Open access
- Violence in patient spaces
 - Lack of detection capability
 - Unlocked doors
 - Open access





Threats

- Violent crime
- Burglary

Vulnerabilities

- Burglary of storage areas
 - Lack of detection capability
 - Open access
- Burglary of patient property
 - Lack of detection capability
 - Open access





- Violence in parking lot
 - Lack of detection capability
 - Improve camera coverage
 - Install emergency call boxes
 - Improve lighting
 - Open access
 - Install fence and gates





- Violence in patient spaces
 - Lack of detection capability
 - Install panic buttons
 - Improve camera coverage of building entrances and exits
 - Unlocked doors
 - Install electronic access control
 - Restrict public access to one door
 - Open access
 - Build fence and gates





- Burglary of storage areas
 - Lack of detection capability
 - Install alarms
 - Install cameras
 - Open access
 - Install electronic access control
 - Build fence and gates





Threats

- Not many
 - Slightly elevated
 - Rape
 - Theft



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Threats

- Rape
- Theft

Vulnerabilities

- Rape in parking lot
 - Lack of detection capability
- Theft of unattended patient property
 - Lack of detection capability
- Theft of hospital property
 - Patients can move freely between public areas and restricted areas





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- Rape in parking lot
 - Lack of detection capability
 - Install call boxes
 - Improve camera coverage
 - Have security escort people to parking lots after hours



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- Theft of unattended patient property
 - Lack of detection capability
 - Improve camera coverage of public areas
 - Encourage staff to pick up unattended property and turn it in to dispatch



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- Theft of hospital property
 - Install electronic access control
 - Clearly define the "public" vs "private" space





- What are we not going to do?
 - Install a fence around the perimeter





Practical Application

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

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

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BETTER THAN NOTHING VS GOOD ENOUGH





BETTER THAN NOTHING VS GOOD ENOUGH





TAKEAWAYS



- A Multi-Disciplinary Approach that integrates Security design early in the planning process yields the following outcomes:
- <u>Cost/Economics</u> Changes driven by requirements early in the process are less expensive and disruptive. The security overlay is especially important during site selection and master planning.
- <u>Balancing Safety, Functionality, and Aesthetics</u> Balance CPTED with achievement of the design vision for the project.
- <u>Sophistication From the Start</u> Integration allows for more sophisticated, appropriate, and relevant security measures.
- <u>Increased Credibility with Reviewing Agencies</u> Using forethought and presenting holistic solutions makes sense for communities.
- <u>Appropriate Integration with Public Policy</u> Respond to zoning and other regulatory impacts early in the site design/conceptual design process so these considerations 'fit' each other.
- <u>Futureproofing</u>— Thinking through security design early provides insights for future planning, in the case of an organization, campus, district, or development.



Questions?

THANK YOU!





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