Creating Safe Environments
Integrating Planning, Design and Physical Security

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SPEAKERS

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LEARNING OBJECTIVES

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

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

Understand the risk assessment process used throughout the security industry.

Describe principles of Crime Prevention Through Environmental Design (CPTED).

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

ABOUT AE WORKS

WE TAME BUILDING COMPLEXITIES

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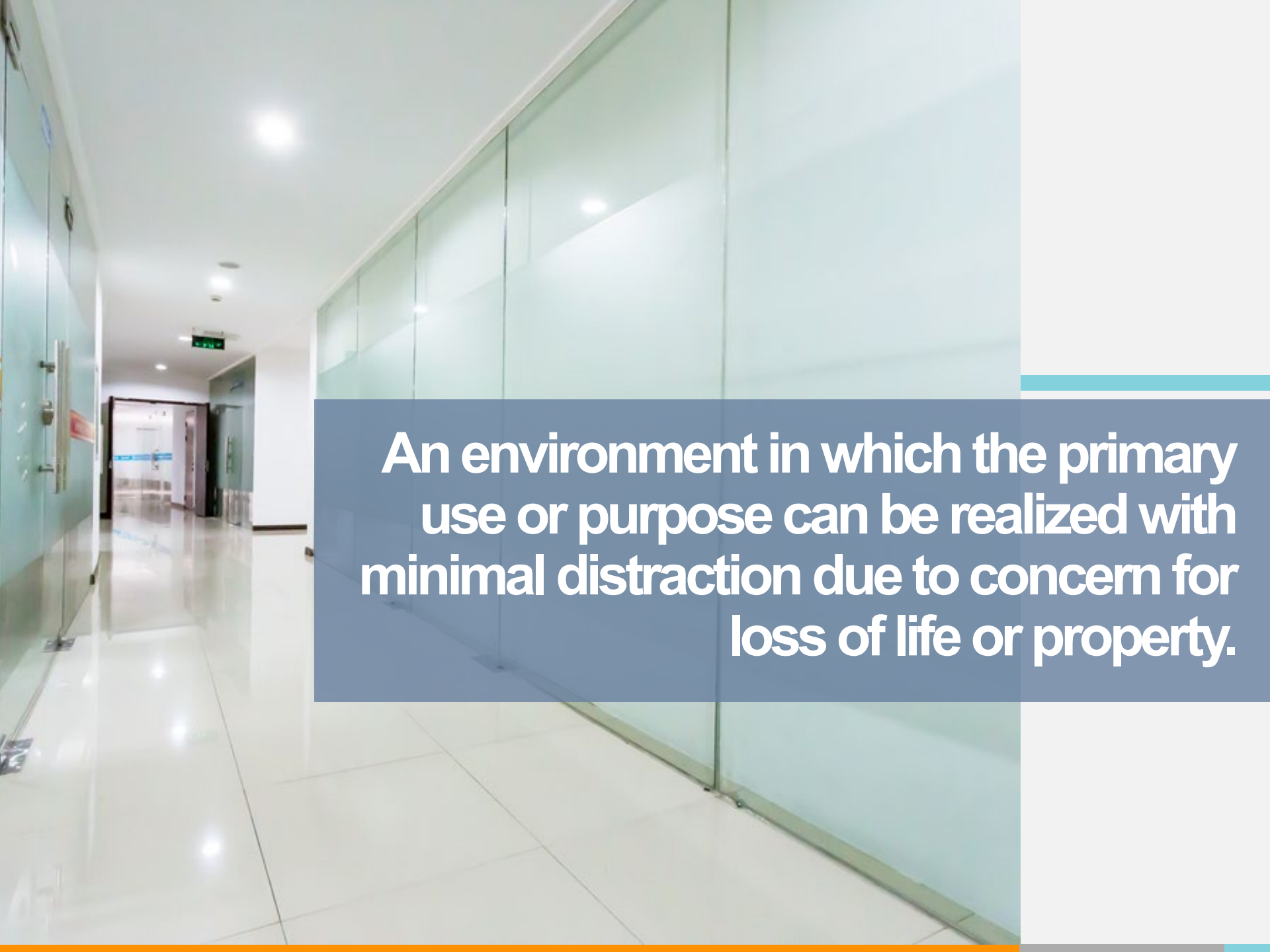
ARCHITECTURE

ENGINEERING

PLANNING + STRATEGY

SECURITY RISK MANAGEMENT

PROJECT SERVICES

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AGENDA

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

AGENDA

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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

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AGENDA

1. What is a Safe Environment?

2. Safe Environment Planning:
   A Multi-Disciplinary Approach
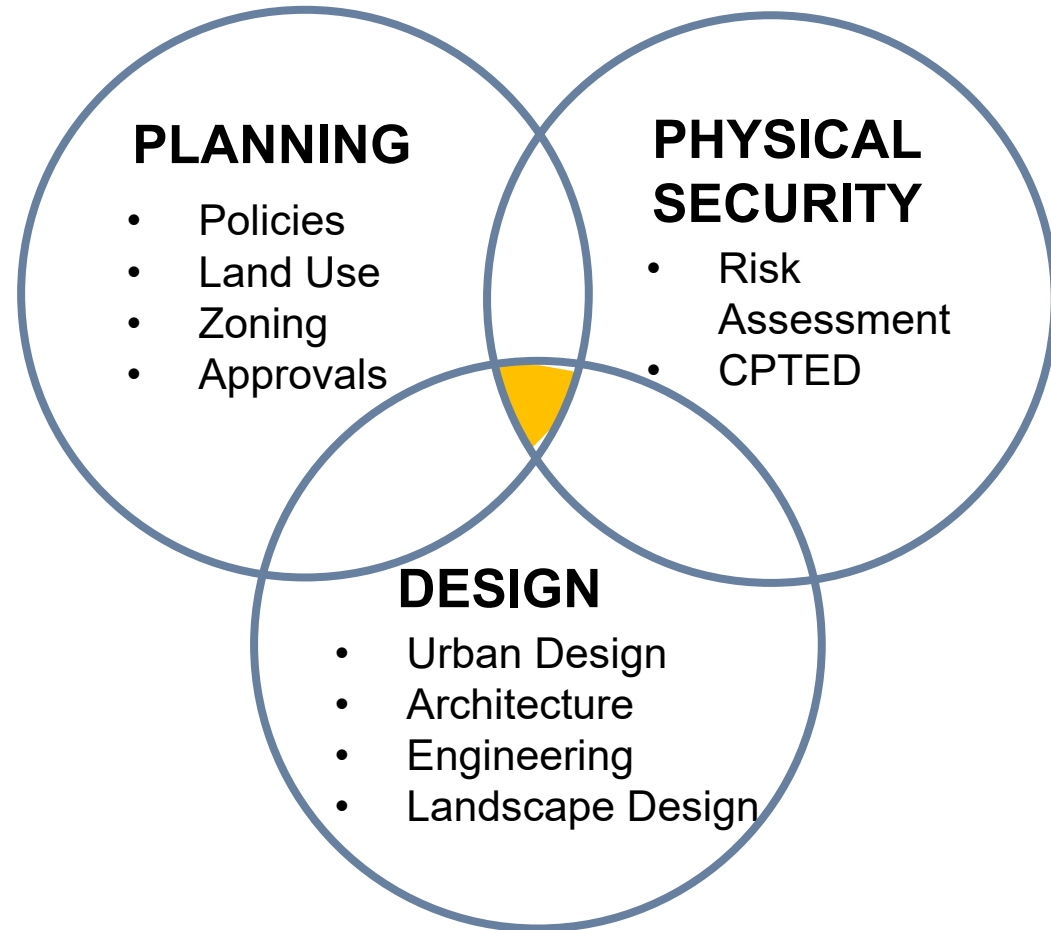
3. **SAFE ENVIRONMENT DESIGN**

4. Security?

5. Design

6. Planning

7. Randoms

8. Q&A

SAFE ENVIRONMENT DESIGN

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

1960s

Oscar Newman (1970s) – Defensible Spaces
- See and be seen, culture of intervention

1970s

1970s

C. Ray Jeffery (1970s) – Crime Prevention Through Environmental Design
- CPTED
- Opportunity, motivation, risk, history

1980s

Wilson and Kelling (1980s) – "broken windows theory"
- Maintenance

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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
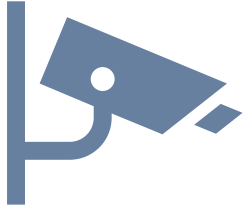- Break areas
- Lighting

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
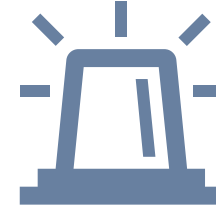- Broken Windows theory

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
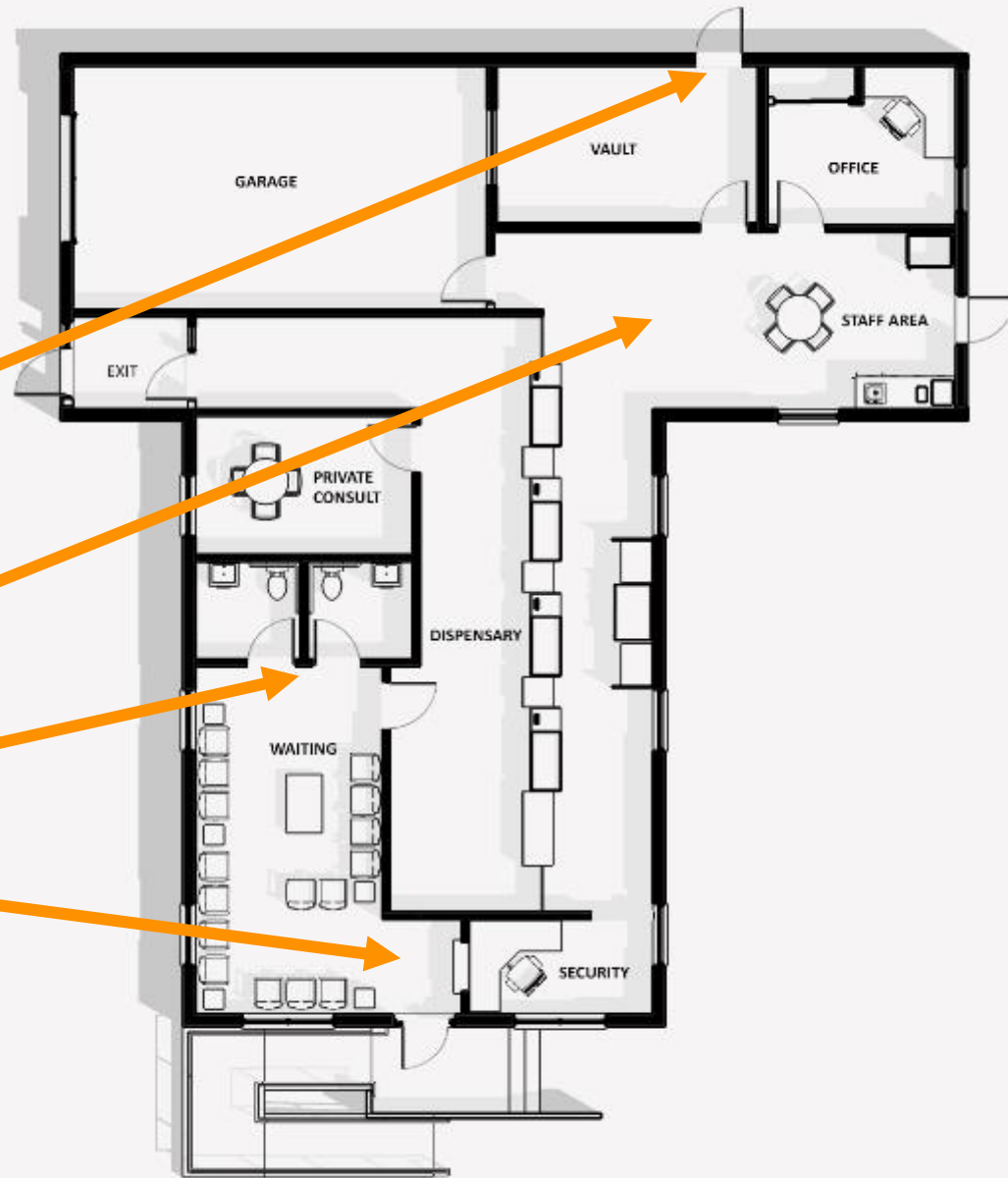## RISK – Burglary & Robbery

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

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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

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EXERCISE

RISK – Burglary & Robbery

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

EXERCISE

RISK – Burglary & Robbe

- 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?

2. Safe Environment Planning:
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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)

X

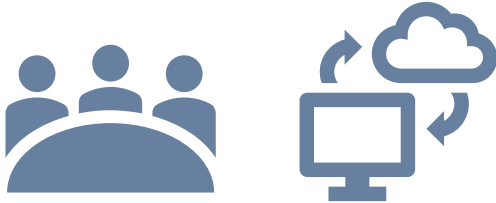**Probability (Threat)**

X

Vulnerability

=

Risk

SECURITY

ASSETS

People

Mission critical equipment and systems

Mission critical support systems

Other equipment
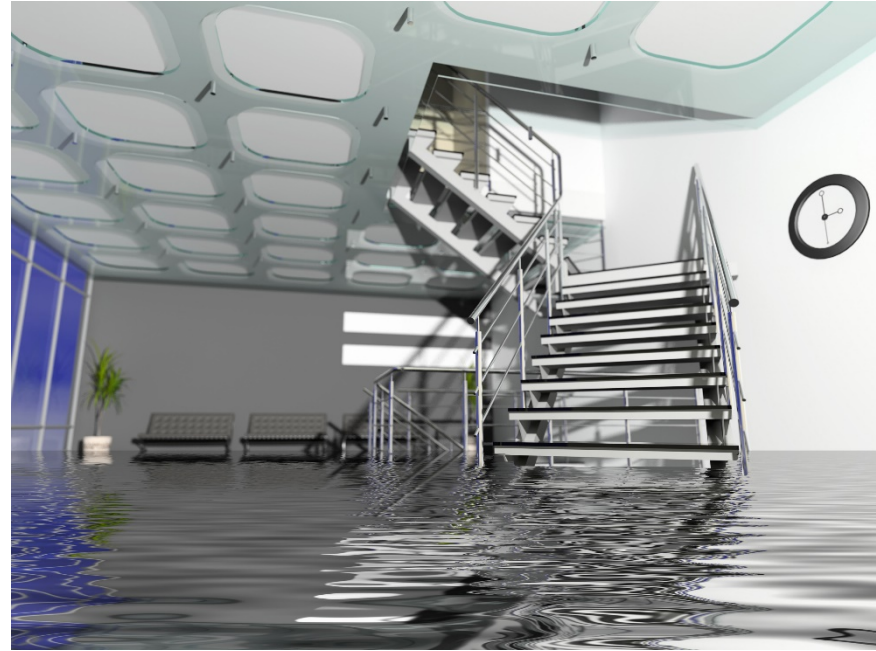
CRITICALITY

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

SECURITY

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.

SECURITY

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.

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SECURITY

Consequence (Asset)

X

Probability (Threat)

X

Vulnerability

=

Risk

AGENDA

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4. Security?

5. **DESIGN**
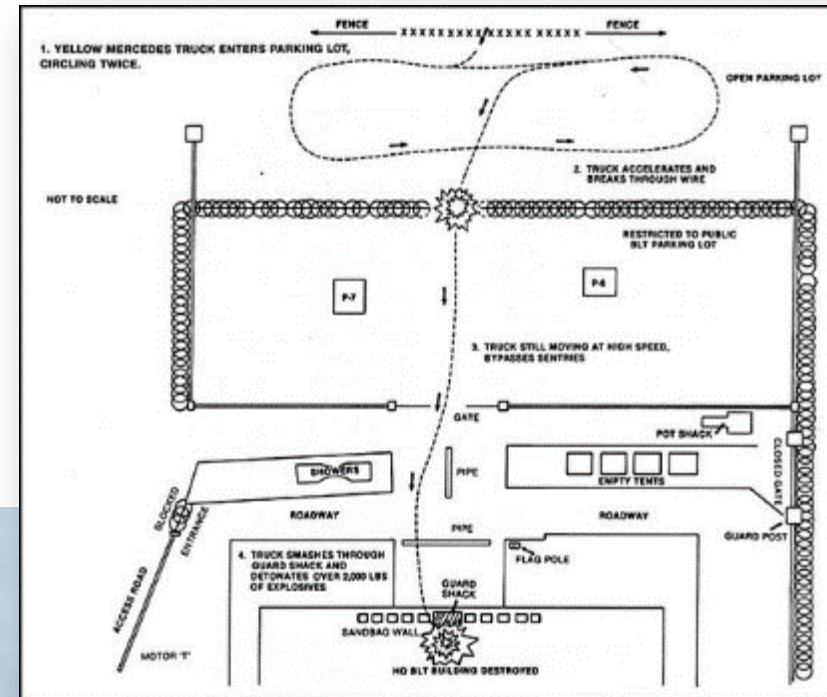
6. Planning

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How do we apply this in Design?

SAFE ENVIRONMENT DESIGN
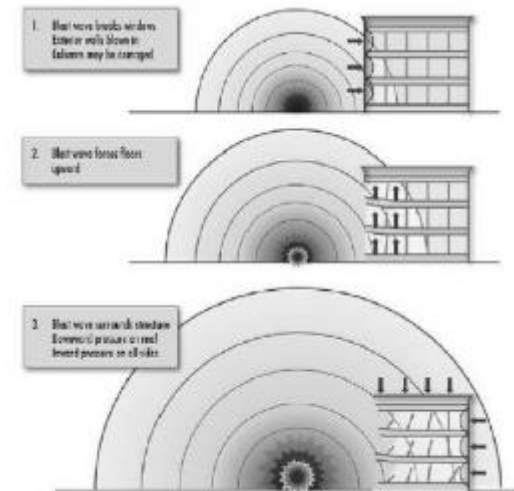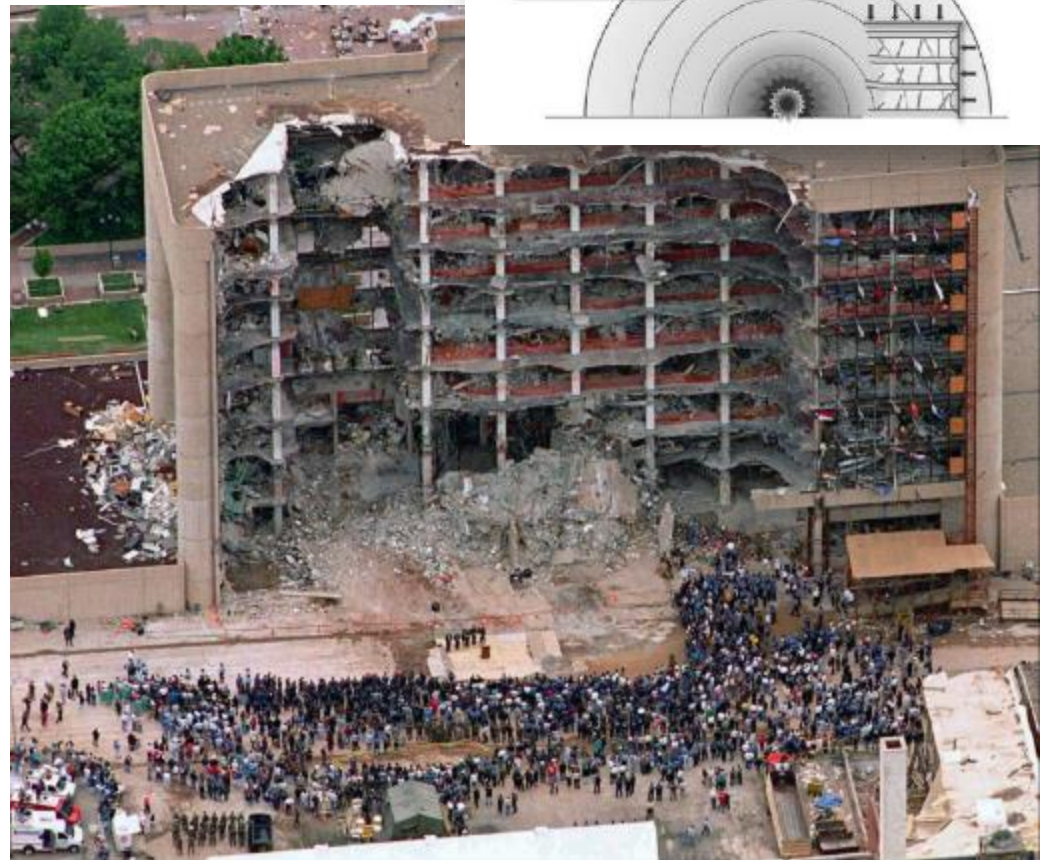
ASCARI 1983 BEIRUT BARRACKS

- 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

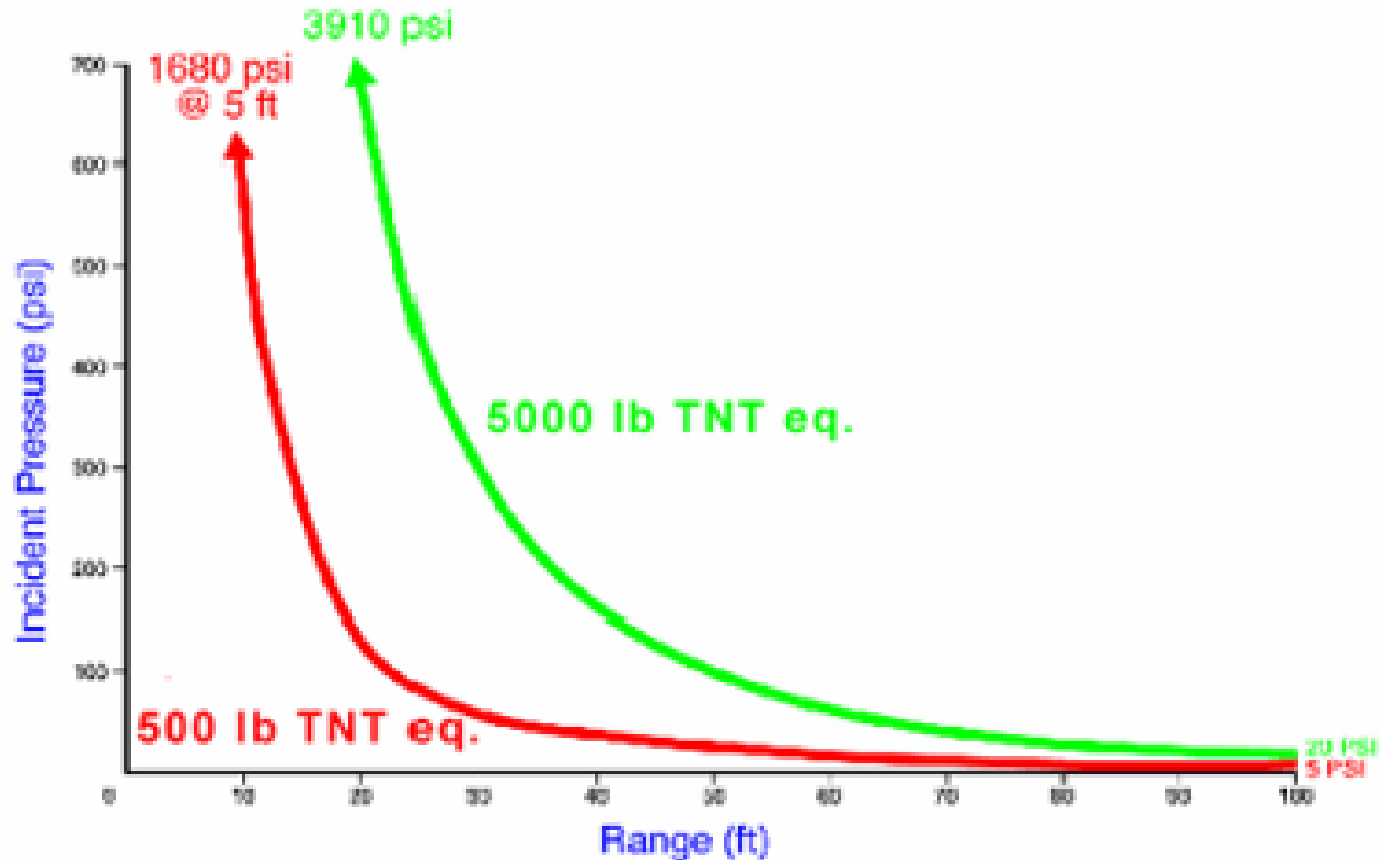**Threat** – vehicle bomb, determined adversary - high

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

Risk – high

SAFE ENVIRONMENT DESIGN

WHAT DID WE DO?

SAFE ENVIRONMENT DESIGN

WHAT DID WE LEARN?

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

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

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
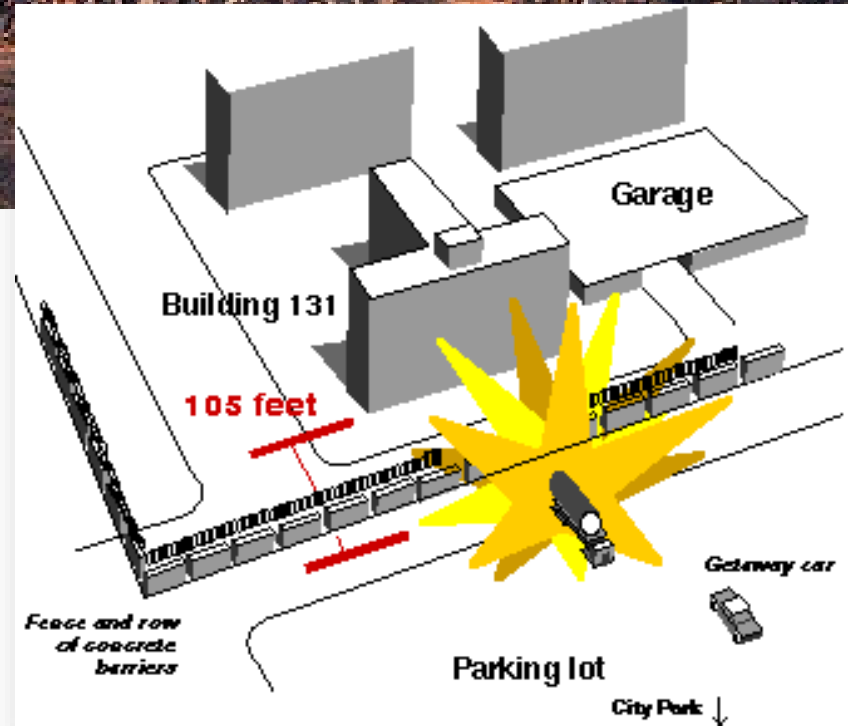
Explosion

- 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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7. **RANDOMS**

8. Q&A

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	
Retirees – don't price them out	• Around during the day • Notice everything • Call the police about everything
Stay at home parents – don't price out the single income family	• Taking kids to and from the playground all through the day • Incredibly aware of any potential threat to their child
Responsible development/ renewal	• Be mindful of the tax impacts • Include attractive public spaces
You need more outdoor space – get the engaged residents to look outside	• Gardens/ front yards/ porches • Eyes outside during appropriate months

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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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