CPTED and Situational Crime Prevention

Crime Prevention Through Environmental Design (CPTED)
Best Practices in Physical Security

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CPTED Defined

- CPTED is an acronym for **Crime Prevention Through Environmental Design** (CPTED).
- CPTED is the design or re-design of an environment to reduce crime opportunity and fear of crime through **natural, mechanical, and procedural** means.
- CPTED is best applied with a multi-disciplinary approach that engages planners, designers, architects, landscapers, law enforcement, and residents in working teams.
Basic CPTED

- Natural Surveillance
- Access Control
- Territoriality
Current CPTED components

- Surveillance
- Access Control
- Territorial Reinforcement
- Image and Maintenance
- Locational Setting and Place Considerations
Newman’s Defensible Space Principles – evolved into CPTED...

- Facilitates TERRITORIALITY
- Facilitates SURVEILLANCE
- Reduces STIGMA
- Considers SAFE PLACEMENT
- Responsive to RESIDENT NEEDS
- Avoids concentration of DISADVANTAGED
Why Consider CPTED?

- Role of physical environment in crime and fear of crime
- Nature of physical environment --
  - Can attract offenders
  - Make crime easy
  - Impede arrests
  - Can increase fear of crime
Perimeter Security Objectives

1. Deter
2. Detect
3. Delay
4. Assess
5. Respond

Source: MIL-HDBK-1013/1 (1993), Figure 5
This illustration shows an example of an industrial type facility using conventional barriers. This scenario shows the relative time to ingress and egress location with the stolen material.

- Guards will not be available to interrupt the intruder unless systems correctly detect and the guards have time to respond.
- If intruder does not intend to leave scene, response time is halved.

### Time Estimate

<table>
<thead>
<tr>
<th>Task</th>
<th>Mean Time (min)</th>
<th>Task Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.1</td>
<td>Climb over fence</td>
</tr>
<tr>
<td>2</td>
<td>0.3</td>
<td>Run 250 feet (76m)</td>
</tr>
<tr>
<td>3</td>
<td>2.0</td>
<td>Force door</td>
</tr>
<tr>
<td>4</td>
<td>0.4</td>
<td>Walk 150 feet (46m)</td>
</tr>
<tr>
<td>5</td>
<td>1.0</td>
<td>Force lock</td>
</tr>
<tr>
<td>6</td>
<td>0.1</td>
<td>Walk to container</td>
</tr>
<tr>
<td>7</td>
<td>3.0</td>
<td>Open container</td>
</tr>
<tr>
<td>8</td>
<td>1.0</td>
<td>Gather material and escape</td>
</tr>
<tr>
<td>9</td>
<td>7.9</td>
<td>Total (approx. 8 min)</td>
</tr>
</tbody>
</table>

Source: MIL-HDBK-1013/1 (1993), Figure 7
CPTED Evolution

Partial Listing

21st Century Security and CPTED
Situational crime prevention studies

The Delft Checklists (1994), Netherlands
Various NIJ Studies (1990s)
Various Home Office CPTED Studies (1980s)
Cornish & Clarke, (1986) Rational Choice Theory
Alice Coleman, (1985) Utopia on Trial
Paul and Patricia Brantingham, (1981) Environmental Criminology
Ronald V. Clarke, (1980) Situational Crime Prevention
Patricia Mayhew, (1979) Defensible Space
Westinghouse CPTED studies (1970s-80s)
Felson & Cohen, (1979) Routine Activities Theory
Barry Webb and Barry Poyner, (1978) Beyond Defensible Space
Oscar Newman (1975) Design Guidelines for Creating Defensible Space
Oscar Newman (1972), Defensible Space: Crime Prevention Through Urban Design
C. Ray Jeffrey (1971, 1977), Crime Prevention Through Environmental Design
Jane Jacobs (1961), The Death and Life of Great American Cities
Crime opportunity occurs at the nexus of offender, victims, at specific locations.

Criminal offenders with motive, means, and intention to commit crime, provided situational crime opportunity, are most likely to commit crimes.
"Individual criminal events must be understood as confluences of offenders, victims or criminal targets, and laws in a specific settings at particular times and places."

Brantingham and Brantingham, Environmental Criminology (1981)
Targeting Offenders

- Targeting offenders is a specific deterrence (targeting individual offenders) and general deterrence (groups of individual offenders) strategy.

- 10% of offenders commit 60% of the crimes
Preventing Victimization

- Targeting victims is a tactic used to educate potential or profiled future victims on ways to avoid being a victim.
Targeting Criminal Targets

- Targeting criminal targets means keying on specific crime targets making them less accessible, more secure, reducing their exposure, availability, or prevalence within a given area.
Improving Laws

- Without good laws, enforcement, and adjudication managers are vulnerable to increased crime opportunity on their sites
Exploiting Settings

- Understanding crime settings are key to solving their occurrence. The setting of crime may be described as a stage play with actors, co-actors, key-grips, stage hands, sound technicians, ushers (flaggers), tellers, security, and props.
Crime is not a steady-state. Crimes occur in patterns consistent with human behavior. It is important to target the frequency, times, hours, days, weeks, months and seasons of criminal events.
Targeting Key Places of Crime Operation

- Not all places are suitable for crime. 50% of crimes are committed at 10% of places. Identifying crime place seeking behaviors can lead to positive remedies to reducing crime opportunities at places.
Routine Activity and Crime Opportunity Theory

- Crimes occur most often where...
  - Absence of a capable guardian
  - Suitable crime targets
  - Likely offenders
  - Absence of intimate handlers
Situational Crime Prevention

- Increase the effort needed to commit crime
- Increase the risks associated with crime
- Reduce the rewards of crime
- Reduce provocations
- Removing excuses for non-performance
# Situational Crime Prevention

## 25 Techniques

<table>
<thead>
<tr>
<th>Increase the Effort</th>
<th>Increase the Risks</th>
<th>Reduce the Rewards</th>
<th>Reduce Provocations</th>
<th>Remove Excuses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steering column locks and immobilisers</td>
<td>Take routine precautions: go out in group at night, leave signs of occupancy, carry phone “Cocoon” neighborhood watch</td>
<td>Off-street parking</td>
<td>Efficient queues and polite service</td>
<td>Rental agreements</td>
</tr>
<tr>
<td>Anti-robbery screens</td>
<td></td>
<td>Gender-neutral phone directories</td>
<td>Expanded seating</td>
<td>Harassment codes</td>
</tr>
<tr>
<td>Tamper-proof packaging</td>
<td></td>
<td>Unmarked bullion trucks</td>
<td>Soothing music/muted lights</td>
<td>Hotel registration</td>
</tr>
<tr>
<td>Entry phones</td>
<td>Improved street lighting</td>
<td>Removable car radio</td>
<td>Separate enclosures for rival soccer fans</td>
<td>“No Parking”</td>
</tr>
<tr>
<td>Electronic card access</td>
<td>Defensible space design</td>
<td>Women’s refuges</td>
<td>Reduce crowding in pubs</td>
<td>“Private Property”</td>
</tr>
<tr>
<td>Baggage screening</td>
<td>Support whistleblowers</td>
<td>Pre-paid cards for pay phones</td>
<td>Fixed cab fares</td>
<td>“Extinguish camp fires”</td>
</tr>
<tr>
<td>Ticket needed for exit</td>
<td>Taxi driver IDs</td>
<td>Property marking</td>
<td>Controls on violent pornography</td>
<td>Roadside speed display boards</td>
</tr>
<tr>
<td>Export documents</td>
<td>“How’s my driving?” decals</td>
<td>Vehicle licensing and parts marking</td>
<td>Enforce good behavior on soccer field</td>
<td>Signatures for customs declarations</td>
</tr>
<tr>
<td>Electronic merchandise tags</td>
<td>School uniforms</td>
<td>Cattle branding</td>
<td>Prohibit racial slurs</td>
<td>“Shoplifting is stealing”</td>
</tr>
<tr>
<td>Street closures</td>
<td>CCTV for double-deck buses</td>
<td>Monitor pawn shops</td>
<td>“Idiots drink and drive”</td>
<td>Easy library checkout</td>
</tr>
<tr>
<td>Separate bathrooms for women</td>
<td>Two clerks for convenience stores</td>
<td>Controls on classified ads.</td>
<td>“It’s OK to say No”</td>
<td>Public lavatories</td>
</tr>
<tr>
<td>Disperse pubs</td>
<td></td>
<td>License street vendors</td>
<td>Disperse troublemakers at school</td>
<td>Litter bins</td>
</tr>
<tr>
<td>“Smart” guns</td>
<td>Red light cameras</td>
<td>Ink merchandise tags</td>
<td>Rapid repair of vandalism</td>
<td>Breathalyzers in pubs</td>
</tr>
<tr>
<td>Disabling stolen cell phones</td>
<td>Burglar alarms</td>
<td>Graffiti cleaning</td>
<td>V-chips in TVs</td>
<td>Server intervention</td>
</tr>
<tr>
<td>Restrict spray paint sales to juveniles</td>
<td>Security guards</td>
<td>Speed bumps</td>
<td>Censor details of modus operandi</td>
<td>Alcohol-free events</td>
</tr>
</tbody>
</table>

Surveillance and Visibility

- Natural (passive) surveillance
- Informal surveillance
- Formal surveillance
- Mechanical surveillance
- Visibility and Field of View
Territoriality and Defensible Space

- Perceptions of place management and place definition
  - Residents and Leaseholders
  - Legal Guardians and Place Managers
- Space delineation (public, semi-public, semi-private, private)
- Size, location, zoning, and use
Target Hardening

- Strengthening barriers and boundaries
- Depth of defense and degrees of security Symbolic barriers
- Physical barriers
- Electronic barriers
Access Control and Escape Routes

- Access to transportation and through-routes
- Access to open boundaries or barrier-free borders
- Vacant uncontrolled land
- Removing “hard corners” to reduce natural hiding places
Image, Aesthetics, and Activity Support

- Focus on “Broken Windows”, litter, garbage, abandoned property
- Rapidly secure vacant units and unoccupied buildings to deny space for unmonitored activities
- Use curb appeal and grooming to reinforce perceptions of place management and territoriality
- Reinforce territoriality through increased controlled presence at target locations (e.g., substation, maintenance, etc.)
1. Natural Surveillance

- CPTED focuses on the placement of physical features, activities, and people in such way as to maximize visibility. This includes the lighting of public spaces and walkways at night.
2. Natural Access Control

- CPTED features the physical guidance of people coming and going from a space by the judicial placement of entrances, exits, fencing, landscaping, and lighting.
3. Territorial Reinforcement

- CPTED encourages the use of physical attributes that express ownership, such as fences, pavement treatment, art, signage, and landscaping.
4. Image and Maintenance

- CPTED allows for the continued use of a space for its intended purpose and serves as an additional expression of ownership. CPTED is concerned with image, reputation, and stigma. CPTED is concerned with vigilant management practices that reduce crime opportunity and sustain territoriality, access control, and surveillance.
5. Locational and Place Considerations

- Crimes occur at specific locations and places. CPTED is concerned with the environmental settings of crime and how crime is influenced by the proximity and juxtaposition of safe and unsafe activities. Modern CPTED must consider environmental criminological issues that impact crime opportunity at specific places.
The Three Ds of CPTED

- The Three-D approach provides a simple guide for determining the appropriateness of space design and usage. It is based on the following 3 Ds:
  - Definition
  - Design
  - Designation
Space Definition

- How is the space defined?
- Is it clear who owns and manages it?
- Where are its natural borders?
- Are there social or cultural definitions that effect how the space is used?
- Are there symbolic signs?
- Is there a conflict or confusion between the designated purpose and definition?
Space Design

- Is there “depth of defense” separating the four types of spaces (public, semi-public, semi-private, and private)?
- How well does the physical design support the intended function?
- How well does the physical design support the definition of the desired or accepted behaviors?
- Does the physical design conflict with the productive use of space?
Space Designation (P-SP-SP-P)

- Private space
- Semi-private space
- Semi-public space
- Public space

Space Designation (P-SP-SP-P)

- Private space
- Semi-private space
- Semi-public space
- Public space
What are the CPTED elements in this layout?
### TABLE 18: CPTED STRATEGIES FOR SYSTEM COMPONENTS

<table>
<thead>
<tr>
<th>CPTED Strategy</th>
<th>System Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Platforms</td>
</tr>
<tr>
<td>Lighting</td>
<td>✓</td>
</tr>
<tr>
<td>Visibility (clear lines of sight)</td>
<td>✓</td>
</tr>
<tr>
<td>Use of Glass &amp; Natural Light</td>
<td>✓</td>
</tr>
<tr>
<td>Keep Clear of Obstacles</td>
<td>✓</td>
</tr>
<tr>
<td>No Hidden Corners/Dead Areas</td>
<td>✓</td>
</tr>
<tr>
<td>Limit Access Paths/Points</td>
<td>✓</td>
</tr>
<tr>
<td>Electronic Access Control</td>
<td>✓</td>
</tr>
<tr>
<td>Security Cameras</td>
<td>✓</td>
</tr>
<tr>
<td>Emergency Telephones</td>
<td>✓</td>
</tr>
<tr>
<td>Emergency Alarms</td>
<td>✓</td>
</tr>
<tr>
<td>Monitoring by Staff/Security</td>
<td>✓</td>
</tr>
<tr>
<td>Curved Entrance Wall without Doors</td>
<td>✓</td>
</tr>
<tr>
<td>Explosive Resistant</td>
<td>✓</td>
</tr>
<tr>
<td>See-through Containers</td>
<td>✓</td>
</tr>
<tr>
<td>Location*</td>
<td>✓</td>
</tr>
<tr>
<td>Minimal/Low Landscaping</td>
<td>✓</td>
</tr>
<tr>
<td>Fencing</td>
<td>✓</td>
</tr>
<tr>
<td>Public Information Signage</td>
<td>✓</td>
</tr>
<tr>
<td>Large Windows</td>
<td>✓</td>
</tr>
<tr>
<td>Secure Parking</td>
<td>✓</td>
</tr>
<tr>
<td>Vandal- and Graffiti-Proof</td>
<td>✓</td>
</tr>
</tbody>
</table>

*Configure location of gates to be able to close off sections of station. Locate vending machines
Office Park Scenario #1 – Apply CPTED Measures

Use CPTED principles to define space to reduce crime and risk loss event opportunity
Flex Space Scenario #2 – Apply CPTED Measures

Use CPTED principles to define space to reduce crime and risk loss event opportunity
Port Scenario #3 – Small Vessel Marina
Apply CPTED Measures

Use CPTED principles to define space to reduce crime and risk loss event opportunity

Harbor Hill Marina
Scenario #4–Shipyard with Distributed Machines
Apply CPTED Principles

Use CPTED principles to define space to reduce crime and risk loss event opportunity
Stadium Scenario #5 – Apply CPTED Measures

Use CPTED principles to define space to reduce crime and risk loss event opportunity
Primary components of perimeter protection

- Forward Detection
  - Sensors
  - Activity Support

- Perimeter Grounds Security
  - Perimeter activity monitoring and event detection
  - Architectural Landscaping
  - Parking and pathways
  - Closed-circuit television monitoring
  - Security lighting
  - Fencing and physical barriers
  - Network Security (IT infrastructure)
  - Enforcement

- Entry security
  - Receiving and shipping
  - Entrances and exits
  - Access control

Illustration courtesy of Vision Fire & Security

The Future: Integrated Systems with Remote Video Surveillance and Intelligent Monitoring
Before CPTED can become an accepted Science, an objective methodology and framework for analysis and evaluation must be developed (e.g., theory, instruments, measurable features, tools, etc.).

Standardizing CPTED will enable “ordinary people” to perform extraordinary things (SOPs, Protocols, specifications, etc.).

CPTED prescriptions must use of appropriate and sustainable strategies. Scientific methods should target measurable, verifiable, and reproducible interventions and related outcomes.
What is Science as it applies to CPTED?

- A common misperception of science is that it defines "truth". Science is not truth, but rather it is a way of testing thought through conjecture and refutation. It is a process by which experimentation is used to answer questions. This process of experimentation is called the scientific method and involves:
  - Observation
  - Hypothesis
  - Testing
  - Reproducibility

Adapted from Anthony Carpi, http://andrew.ac1.jjay.cuny.edu/~science/faculty/carpi/home.htm
Standards

- Seek out and be current on security standards.
- CPTED Standards should be guided by current practice, standards, and theory. Continual scanning is required to keep current with the latest specifications.
- Security standards are created and maintained by multiple sources that include: standards setting bodies (ISO), governments, NGOs, trade associations, and industry leaders (Protection of Assets Manual), etc.
Codes

- National Building Code (BOCA)
- Uniform Building Code (UBC)
- Fire Codes
- Electrical Code
- NFPA standards
- Americans with Disabilities Act (ADA)
- GSA anti-terrorism security standards
- Underwriters Laboratory Certifications
- Local Zoning Codes
- Other codes (ASTM, ANSI, etc.)
# Sikyur Crime Opportunity Risk Likelihood Coefficient Matrix

<table>
<thead>
<tr>
<th>Crime Coefficient*</th>
<th>Target Area #1</th>
<th>Target Area #2</th>
<th>Target Area #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Building: Court house</td>
<td>.011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Park: Ball fields and pond</td>
<td>.016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public School; middle school, 3500 students</td>
<td>.027</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-Family Housing; 500 units</td>
<td>.029</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laundry Mat; 40 machines</td>
<td>.036</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convenience Store</td>
<td>.034</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacant Dwellings: per dwelling, etc.</td>
<td>.021</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal Crime Opportunity Score</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Illustration data only; actual data to be drawn from local criminalistics.
Typical CPTED Data Collection Assessment Tools

- Interviews
- Focus Groups
- Overviews
- Drug and crime situation assessment
- Surveys
- Demographic data
- Vandalism and property damage data
- Program site visits
- Land use data

- Walk-through and ride-along with police
- Historical data gatherings
- Internal and external public safety and security efficacy data
- Review former evaluations, if any
- Uncover property utilization data
- Street ethnographic (discrete surveillance) methods
- Other research methods
CPTED Assessment Report Outline

- Executive Summary
- Research Methods
- Applicable Codes and Standards
- Threats and Vulnerabilities
- Findings
- Recommendations
- Strategic Plan
- Budget Plan
- Evaluation Plan
- Supporting charts, graphs, and data
Next Steps

- Keep current on place-specific CPTED methodology and framework for analysis and evaluation must be developed (e.g., theory, instruments, measurable features, tools, etc.).
- Standardize your security procedures to enable “ordinary people” to perform extraordinary things (SOPs, Protocols, specifications, etc.).
- Focus on implementing measures that can be scientifically validated and choose methods to measure, verify, and reproduce interventions and related outcomes.
- Share findings so that we can all benefit from your experience and learning.
- Establish written standards that are reviewed and recommended by IADB.
For more information on CPTED contact:

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