Chapter 3

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

C.P.T.E.D. ELEMENTS

Crime Prevention Through Environmental Design (C.P.T.E.D.) is comprised of four (4) key elements: **Surveillance**, **Access Control**, **Territoriality**, and **Activity Support**. Using C.P.T.E.D can eliminate a substantial amount of property crime.
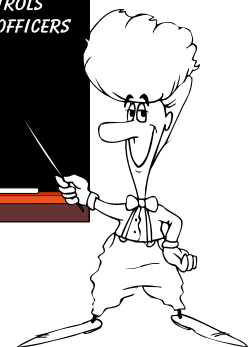
IMPROVE SURVEILLANCE

SURVEILLANCE is the first element of C.P.T.E.D. **Surveillance is the ability to look into an area, and the ability to look back out.** It can be formal or informal. **Formal surveillance** is generally organized, while **informal surveillance** is naturally occurring. *NOTE: You should observe your property from all locations, keeping in mind whether you can see into and out of the property. Keep in mind that residents and staff are formal surveillance partners, and that neighbors or visitors to your property will conduct informal surveillance of your property. Remove anything that hinders surveillance.* There are three types of surveillance to consider. *Natural, Mechanical* and *Organized*. The best plan will involve some combination of all three types of surveillance.

Natural Surveillance is naturally occurring. As people are moving around an area, they will be able to observe what is going on around them, provided the area is open and well lighted. Natural Surveillance is typically free of cost, but observers should choose not to get involved in any situation that may pose a potential threat to themselves or others.

When considering surveillance of your property, remember that casual observers from neighboring properties might be willing to report suspicious activity. All you need to do is ask! It is a great idea to ask them to join with your Neighborhood Watch meeting and safety socials.

Mechanical Surveillance employs the use of cameras, mirrors and other equipment that allows an individual to monitor a remote area. Mechanical

SURVEILLANCE

NATURAL	ORGANIZED
RESIDENTS	RESIDENT PATROLS
MANAGEMENT	BLOCK WATCH
MAINTENANCE	SECURITY PATROLS
GROUNDSKEEPERS	POLICE PATROLS
NEIGHBORS	OFF-DUTY OFFICERS

MECHANICAL
CAMERAS
MIRRORS
C.C.T.V.

VISIBILITY OF RESIDENTS & RESIDENTS' ACTIVITIES ARE PERHAPS THE GREATEST DETERRANT TO CRIME.

BY PUTTING COMMON AREAS AND OTHER ACTIVITIES CLOSER TO UNSAFE AREAS, THE LESS LIKELY YOU ARE TO HAVE A CRIME.

Surveillance usually involves the purchase of moderately inexpensive mirrors to more expensive electronic devices, such as closed circuit television (CCTV).

**NOTE**: Once the equipment is purchased, maintenance of the devices must be considered.

Organized Surveillance includes security patrols and other people who are organized to watch a targeted area. While this is the most effective deterrent to crime, it is also the least cost effective. While it may be necessary to employ security patrols or off-duty police officers, once the patrols are discontinued there is generally nothing left to show for your investment.

IMPROVE ACCESS CONTROL

ACCESS CONTROL is the second element in C.P.T.E.D. Because many criminals look for an easy escape, **limiting access into an area and back out again is a great way to deter criminal activity**. Access Control can be demonstrated by having one way into and out of a location, such as a security post or the use of mechanical gates. Others, who use alternative methods to enter an area look suspicious, risk detection and sense an increased risk of apprehension.

It is important to assess how the intended users are entering the property. It is equally important to assess how the non-intended users are entering the property as well. Look at perimeter fencing for damage. Look for footprints in the dirt and gravel. Check for wear patterns in grassy areas. Determining the weak points will be the first step to correcting the problem.

There are three (3) types of Access Controls to consider: *Natural* (or *Environmental*), *Mechanical* and *Organized*.
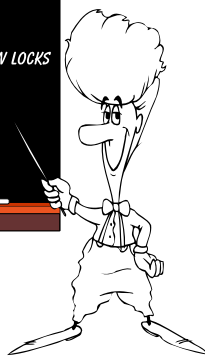
Natural / Environmental Access Control involves the use of the environment. To keep trespassers from climbing over walls for instance, you could plant a hearty cactus in the area where it will be highly visible. The use of dirt berms or large rocks can also keep unwanted visitors from entering onto private property and vacant lots.

Mechanical Access Control includes the use of security gates, which have proven very effective at reducing auto thefts, burglaries and drive-by shootings.

Most perpetrators of these crimes do not want to exit the way they entered as it gives witnesses the opportunity to record license plates and get better suspect information.

Organized Access Control entails the use of security or courtesy patrol to monitor those entering the property. Distribution of parking permits, affixed to registered vehicles, will identify which vehicles belong to the residents. ***Vehicles should not be allowed to back into parking spaces, so that parking permits will be visible at all times.***
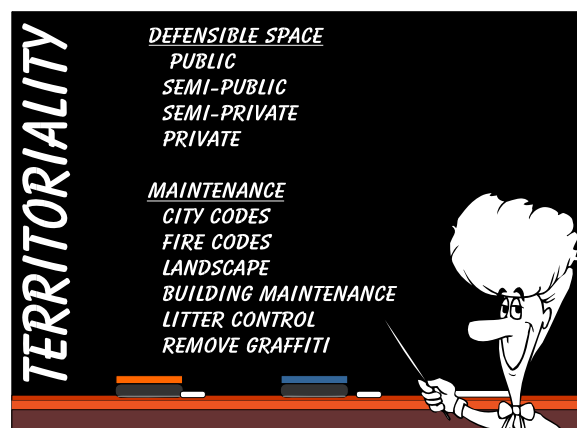
IMPROVE TERRITORIALITY

TERRITORIALITY is the third element in C.P.T.E.D. Territoriality is a psychological impression that people get when they look at the property. If management displays good territoriality, it will influence the community to respect the property as well. Good territoriality demonstrates a sense of ownership, alerting potential offenders that they don't belong there and they will be seen and reported, because undesirable behavior will not be tolerated. **It has two (2) principle components: Defensible Space and Maintenance.**

Defensible Space is divided into four (4) categories: Public, Semi-public, Semi-private, and Private.

1. ***Public*** areas are typically the least defensible. A car driving on a public street would not automatically arouse suspicion.

2. ***Semi-public*** areas might include a cul-de-sac. If there are only five homes in the circle, a driver would be expected to stop at one of the five homes or leave the area.

3. ***Semi-private*** areas might include sidewalks or common areas around residential areas. While most people may not confront a stranger in a common area, they are likely to call the police if the person does not appear to belong there.

4. ***Private*** areas are different in rental communities than in single-family home neighborhoods. In a typical apartment the private area may not begin until you actually enter into the unit. This is especially true if several units share a common balcony or stairways. In a single-family home neighborhood, many owners consider their front yard to be private or defensible space.

There are many ways to establish defensible space. By planting low growing hedges or bushes, you will show a defined property line. By posting signs such as "No Trespassing" or "No Soliciting", you have established the area as defensible space.

TERRITORIALITY

DEFENSIBLE SPACE
PUBLIC
SEMI-PUBLIC
SEMI-PRIVATE
PRIVATE

MAINTENANCE
CITY CODES
FIRE CODES
LANDSCAPE
BUILDING MAINTENANCE
LITTER CONTROL
REMOVE GRAFFITI

INCREASING A RESIDENTS OWNERSHIP & CONTROL OF AN AREA WILL ENSURE A HIGHER LIKELIHOOD OF SUCCESS WITH CRIME PREVENTION PROGRAMS.

INCREASE DEFENSIBLE SPACES TO DECREASE CRIMINAL ACTIVITIES.

Maintenance is another key issue for Territoriality. Properties that are clean and well maintained are more likely to attract residents who take pride in their community. This also promotes confidence in the management team.

If you and a resident agree to improvements or repairs on the rental unit, make sure the details are in writing and signed by both parties. The landlord must approve all improvements to the property ahead of time. If the tenant expects to be reimbursed for materials and/or labor, this is especially true. Keep receipts and records of the time and money spent.

IMPROVE ACTIVITY SUPPORT

ACTIVITY SUPPORT is the fourth element in C.P.T.E.D. This involves the appropriate use of recreational facilities and common areas. The objective is to **fill the area with legitimate users so the abusers will leave.**
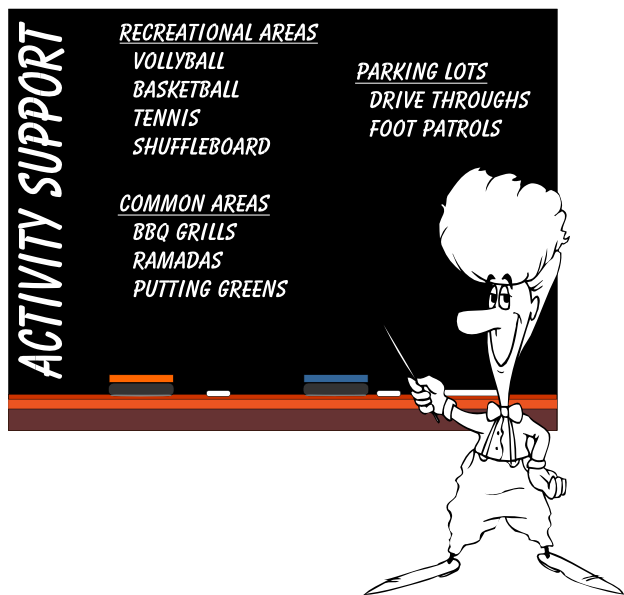
It may be difficult to believe that filling an area with legitimate users will cause the deviant users, or abusers, to leave. But the opposite is also true. If you fill an area with deviant users, the legitimate users will withdraw.

To promote Activity Support, utilize common areas effectively. By incorporating gazebos, picnic areas and other amenities into open areas, the legitimate users will maintain ownership of the property. Small property owners/managers can encourage their tenants to utilize community facilities and parks.

In recreational areas, utilize proper lighting techniques and establish community rules to encourage the proper and safe use of the facilities. For laundry facilities, exercise and game rooms, maintain unobscured visibility for the intended users.

TROUBLESHOOTING

When you consider an area, ask yourself:
- **Who are the intended users?**
- **Why are they not using the area?**
- **What would promote use of the area?**

Also ask yourself:
- **Why are deviant users frequenting the area?**
- **Why is it inviting?**
- **What will discourage them?**

THE 3 "D" CONCEPT OF C.P.T.E.D.

1. <u>Define</u> borders – is territory well defined?

2. <u>Designed</u> properly – is the design good for intended purposes

3. <u>Designated</u> purposes – is the area used for the designated purposes

CONFLICTS WITH C.P.T.E.D. CONCEPTS

SURVEILLANCE	ACCESS CONTROL
Concept: Good lighting	*Concept: Good security fencing/gates*
Conflict: No formal or informal surveillance, residents stay indoors	*Conflict: Gates propped open, locks damaged, fences damaged*
Solutions: Organize block watch activities, training, or other alternatives	*Solutions: Educate residents, effect repairs, notify residents, and evict problem residents*
TERRITORIALITY	**ACTIVITY SUPPORT**
Concept: Buildings well painted, addresses clearly marked, rules posted	*Concept: BBQ grills and tables, common areas, sports and recreation facilities well maintained*
Conflict: Residents only show ownership or concern for own unit, lack of private/semi-private space	*Conflict: Little/no uses by residents, area becomes site for dangerous activities/non-intended users*
Solutions: Encourage gardening, play areas, ownership of areas, and litter patrol	*Solutions: Market amenities, organize events/contests/prizes and plaques, lighting*

C.P.T.E.D. LIGHTING

Lighting by itself does <u>not</u> prevent crime. Many times cars are burglarized while parked under a light. Lighting provides the opportunity for <u>choice</u>; the choice to walk forward because you can see clearly that the path is **clear** AND free of danger. **IF** the user can see a potential danger (person hiding, a gang of kids at the corner), they may choose to walk a different way. Lighting can illuminate a target as easily as it provides a legitimate user the ability to see a potential threat or criminal.

Lighting is a powerful tool that management and residents can use to control and reduce the fear of crime as well as the opportunity for crimes to occur.

Unless you have formal or informal surveillance of an area, lighting may not always prevent crime. In fact, good lighting without surveillance may actually encourage criminal activity in some cases.

GOALS OF LIGHTING

UNIT LIGHTING SHOULD BE:

5   Energy efficient (used consistently)

5   Non-tamperable (use special screws)

5   Break Resistant Lens (Polycarbonate-Lexan)

BUILDING LIGHTING SHOULD:

5   Illuminate building numbers

5   Illuminate building accesses

5   Illuminate front and back areas

5   Illuminate porch lights under control of building,
   Not apartment user.

GROUNDS LIGHTING SHOULD:

5   Provide a cone of light downward to walkways

5   Provide a level of lighting between buildings
        to distinguish forms and movement.

TYPES OF OUTDOOR LIGHTING

Energy-efficient lighting fixtures help you cut your electric bill. Plus, most products are easy to install because many models come pre-wired and pre-assembled. Each style comes with a lamp and you can also choose to add a photocell on some designs.

**Dusk-To-Dawn
High-Pressure Sodium**
150 watt
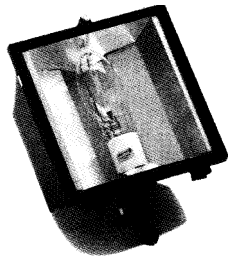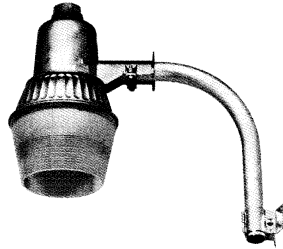
**High-Pressure
Sodium Flood**
150 watt

**High-Pressure
Sodium Wall Light**
70 watt
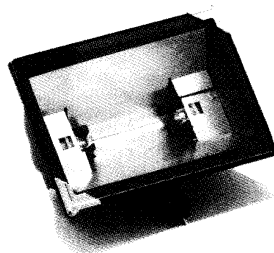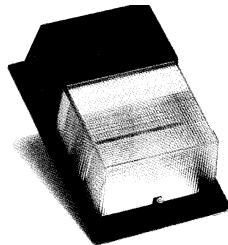
**Quartz Light Metal
Halide**
500 watt

TYPES OF LAMPS

High Pressure Sodium, Metal Halide, Mercury Vapor and Self-Ballasted Mercury Lamps are all high-intensity electric discharge lamps. Except for self-ballasted lamps, auxiliary equipment such as ballasts and starters must be provided for proper starting and operation of each type, in accordance with American National Standards Institute (ANSI) specifications.

Low Pressure Sodium lamps, although technically not high intensity discharge lamps are used in many similar applications. As with HID lamps they require auxiliary equipment for proper starting and operation. These lamps, which have efficacies up to 200L/W, have a mixture of neon and argon gas plus sodium metal in the arc tube and an evacuated outer bulb. When voltage is applied to the lamp the arc discharge is through the neon and argon gas. As the sodium metal in the arc tube heats up and vaporizes, the characteristic yellow amber color of sodium is achieved.

Nominal Wattage of Lamps

Lamp wattage varies during life, because of ballast and lamp characteristics. Ballast data should be reviewed for actual wattage levels.

Voltage Control

An interruption in the power supply or a sudden voltage drop may extinguish the arc. Before the lamp will re-light, it must cool sufficiently, reducing the vapor pressure to a point where the arc will re-strike with available voltage. Instant re-strike lamps re-strike immediately with the resumption of power providing approximately 5% of steady state lumens and a rapid warm-up. Other lamps require approximately one minute cooling before re-lighting. Still other HID types take 3 to 20 minutes, depending on type of lamp and luminaire.

Incandescent Bulbs

Supreme incandescent bulbs are rated at 5000 hours compared to 750 for regular bulbs. Cooler burn with 85% longer lamp life. Withstands voltage fluctuations, and its brass base offers reduced socket freezing. Frosted or clear, available in watt varieties.
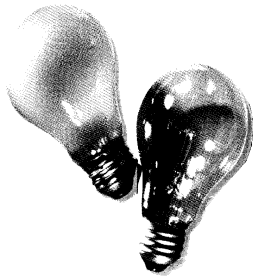
Flood Light

One-piece weatherproof construction with a brass base to reduce socket freezing. Cooler burn

High Pressure Sodium

Hermetically sealed, this high-pressure sodium lamp offers 24,000 hours of dependable life. Built for outdoor uses, it absorbs wind and vibration, is insulated against high voltage pulses and has minimal freezing or rusting in the socket. Clear or coated. (For use in high pressure sodium fixtures only.)
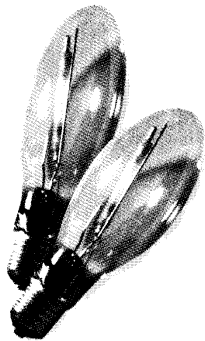
COLOR RENDERING

Another key performance characteristic, *color rendering,* is the ability of a light source to represent colors in objects. The relative measure of this ability is color rendering index or CRI which rates lights sources on a scale of 0 to 100.

The higher the CRI, the more vibrant or close to natural the colors of objects appear. For example, a CRI of 0 would come from a source that provides light without color, much like a black and white television. A CRI of 100 would represent a source that has the rendering capabilities of incandescent light (for sources below 5000K) or daylight (for sources above 5000K). CRI is especially important when evaluating fluorescent and HID sources because they have a wide range of CRI's.

Fluorescent Tubes

Cast cool, bright, economical light indoors.

Pictured: Circular, one of the many fluorescent tubes available.

PROPER USE VARIOUS LIGHTS

- METAL HALIDE: RECREATION AREAS, PARKING LOTS
- HIGH PRESSURE SODIUM: PARKING LOTS, COMMON AREAS
- FLUORESCENT: COVERED PARKING, PORCH LIGHTS, WALK PATHS
- INCANDESCENT: PORCH LIGHTS, INSIDE UNITS
- LOW PRESSURE SODIUM: DUMPSTERS, MAINTENANCE SHOPS

SECURITY LIGHTING

1. **Purposes of lighting:**
   - Reduce crime
   - Reduce trespassing
   - Reduce concealment
   - Increase security
   - Increase confidence
   - Increase sense of territoriality
   - Increase surveillance

2. **Lighting terminology:**
   - Foot candle: equals light from 1 candle at 1 foot
   - Lux: European scale for foot candle
   - Lumen: quantitiy of light from source
   - Watt: amount of energy consumed
   - Life: number of hours bulb will last

3. **Three types of lighting:**
   - Incandescent: on/off bulb, hot, spot lamps, flood lamps, porch lights, lollipop/bulb lights
   - Florescent: flickers on, long tubes, compact, screw into porch lights, lollipop lights
   - High Intensity Discharge: mercury vapor, high pressure sodium, metal halide

PROS AND CONS

1. Type One: Incadescent
- Low initial cost
- High operating cost
- Low efficiency, 80% energy transfer heat
- Short bulb life
- Good color rendering
- Cheap bulb, expensive electric bill

2. Type Two: Florescent
- Moderate initial cost
- Moderate operating cost
- Moderate efficiency
- Moderate bulb life
- Poor to good color rendering (depends on phosphorous or tube)

3. Type Three: High Intensity Discharge
- High initial cost
- Low operating cost
- High efficiency
- Long bulb life
- Good to excellent color rendering

LIGHT and LAMP COMPARISON

While many lamps will offer varying degrees of efficiency and effectiveness, this is a general guide to discuss advantages and disadvantages with certain lamps. Contact a professional lighting consultant if you have any questions. Performance and costs may vary greatly from manufacturer to manufacturer. These charts are provided to show there are more considerations than just the cost of lighting.

FIXTURE COST

HIGH

MODERATE

LOW

| Quartz | Incandescent | Fluorescent | Mercury Vapor | Low Pressure Sodium | High Pressure Sodium | Metal Halide |

OPERATING COST

HIGH

MODERATE

LOW

| Incandescent | Quartz | Mercury Vapor | Fluorescent | Metal Halide | High Pressure Sodium | Low Pressure Sodium |

LIFE EXPECTANCY

30,000

10,000

0

| 750 | 2,500 | 10,000 | 11,000 | 18,000 | 24,000 | 24,000 |
| Incandescent | Quartz | Fluorescent | Metal Halide | Low Pressure Sodium | Mercury Vapor | High Pressure Sodium |

MOST LUMENS PER WATT
(Similar to miles-per-gallon)

175

100

50

0

| 20 | 25 | 55 | 70 | 90 | 120 | 175 |
| Incandescent | Quartz | Fluorescent | Mercury Vapor | Metal Halide | High Pressure Sodium | Low Pressure Sodium |

Results may vary by lamp type.

COLOR RENDERING

GOOD

MODERATE

LOW

| Metal Halide (VERY white) | Quartz | Incandescent (yellow to white) | Mercury Vapor (bluish white) | Fluorescent (white) | High Pressure Sodium (pink or light gold) | Low Pressure Sodium (deep yellow) |