Deterring Crime Through Design

The Neenah Police Department's philosophy of policing recognizes the need for partnerships with other elements of the community to identify and solve neighborhood crime and disorder problems, and where practical, to create an environment in which problems do not arise. In land development the NPD would like to see a variety of crime prevention measures incorporated in the initial design of new projects.

Examples of such measures are outlined on this page under the four basic concepts of Crime Prevention Through Environmental Design (CPTED). Some caveats regarding CPTED are also included.

CPTED Concepts and Measures

CPTED is based on a set of four design and usage concepts that can lead to a reduction in the incidence and fear of crime, and an improvement in the quality of life. These concepts are defined briefly as follows:

- **Surveillance**. Involves the use of electrical and mechanical devices, and the location of physical features, activities, and people to provide good visibility in the environment. Creates a risk of detection for offenders and a perception of safety for legitimate users.
- **Access control**. Employs electrical and mechanical devices, people, and natural measures to create a perception of risk to offenders and deny them access to targets. Also guides legitimate users safely through the environment.
- **Territoriality**. Uses physical features and signs to define ownership and control activities in the environment. Delineates spaces with limited or no public access.
- **Maintenance**. Allows the continued use of spaces for their intended purposes. Maintains the effectiveness of measures employed for surveillance, access control, and territoriality.

Surveillance

Surveillance measures use electrical and mechanical devices and various physical means to enhance visibility in the environment. Surveillance is said to be natural if it comes from people and activities normally in the area.

Lighting

- Illuminate all exterior areas that people use at night so they can see where they are going and identify others along their route. Lighting should be consistent to reduce contrast between shadows and illuminated areas.
- Avoid lighting isolated areas that people should not use at night.
- Don't rely on streetlights or lights from adjoining properties for illumination at night.
- Use timers or photoelectric cells to turn lights on at dusk and off at dawn. And use motion sensors to turn lights on when motion is detected.
- Provide interior lighting where adequate natural light does not exist, e.g. in hallways, stairwells, parking garages and structures.

Cameras

- Install cameras to record persons and activities in areas that are not monitored visually in real time. Use cameras that provide high-quality, digital imagery of suspicious persons and activities to help in crime investigations.
- Provide Internet links to enable camera imagery to be monitored at remote locations.
- Install cameras with video analytics or intelligent video software that can detect unusual or suspicious activity as it is occurring. The software will alert personnel who have monitors, but would not be watching them all the time, that a defined alarm condition has occurred, e.g., that a person has entered an area that is supposed to be unoccupied. The police could then be called if a crime is observed. They might even arrive in time to catch the criminal.

Windows and Doors

- Provide two-way visibility in areas open to the public. Do not obstruct windows and doors with signs, displays, plants, etc.
- Provide one-way visibility from inside to outside in areas not open to the public. Use mirrored glass or see-through curtains to maintain inside privacy, and glare-proof glass to enable occupants of a lighted building to see out at night.
- Install peepholes in doors to view people seeking to enter secure areas.

Landscaping

- Plant trees and bushes away from light fixtures so they do not block illumination on the ground.
- Don't plant anything along pedestrian paths that a person could hide in or behind.
- Grade land where practical without substantially altering the natural terrain to provide unobstructed sight lines within the development and from adjacent streets and developed areas.

Residential Developments

- Orient houses so persons inside can see the street and the entrance to the adjacent house.
- Provide front porches with good views of the street.
- Place garages even with or set back from fronts of houses.
- Use straight short cul-de-sacs instead of curved, angled, or long ones where practical without substantially altering the natural terrain to enable the end of the cul-de-sac to be seen from the cross street.
- Use streets as buffers between housing and parks, playgrounds, schools, commercial development, etc.
- Use open fencing instead of solid walls where privacy or environmental noise mitigation is not needed.
- Design exterior stairs, walkways, balconies, and patios with open railings, not solid walls.

Commercial Developments

- Orient buildings for good visibility of the street, parking lot, and other buildings in the development.

- Orient parking spaces to provide good visibility between cars from the buildings.

Parking Structures and Garages

Use the following:

- Columns instead of interior walls
- Glossy white or light-colored paint on walls and ceilings
- Open structures for exterior stairways
- Mirrors to provide visibility around corners.
- Open elevator lobbies when permitted by the Fire Code

Indoor Facilities and Activities

- Locate high-activity rooms and areas next to public and semi-public areas. These include building lobbies, rental and property manager's offices in multi-family residences, cashiers in stores and restaurants, etc. Provide large, unobstructed windows for good visibility looking both in and out.
- Locate receptionists or security guards in building lobbies with a good view of the entrance to the building and its interior elevators and stairs.
- Provide a clear view of room interiors from room entrances.
- Locate facilities for activities that involve a few people at a time in high-activity areas so they can benefit from the natural surveillance and good visibility in the area. These include restrooms, elevators, stairs, ATMs, pay phones, cluster mail boxes, laundry rooms, trash dumpsters, etc.
- Design wholly- or partially-transparent doors and walls for enclosed elevator lobbies so people in them can be seen from outside the lobbies. Design non-transparent doors to be kept open and close automatically when a fire alarm occurs or a smoke detector is activated.

Outdoor Facilities and Activities

- Install benches or other types of seats for people can sit and observe activities on streets, sidewalks, open spaces, etc. Design the seats to comfortable for sitting and not for sleeping or skateboarding. (Their use should be monitored to prevent people using them from smoking, drinking, panhandling, drug activity, and other prohibited conduct.)
- Locate facilities for activities that attract large numbers of people in areas of low usage and poor visibility so that people involved in them can provide surveillance in the area. These include basketball courts, ball fields, eating establishments, etc.
- Locate facilities for activities that involve a few people at a time in areas of high usage and good visibility so they can benefit from the natural surveillance in the area. These include restrooms, pay phones, cluster mail boxes, laundry rooms, ATMs, bus stops, bike racks, parking lots, hiking or jogging trails, etc.
- Locate high-traffic paths to and from buildings through areas that need natural surveillance, but only if a direct route is used.
- Mix residential, commercial, and other land development permitted by zoning regulations to provide round-the-clock street activity. This provides additional natural surveillance.

- Locate parking lots where non-conflicting users, e.g., churchgoers on weekends and office workers on weekdays, can share the spaces to increase the times that people are in the area.

Access Control

Access control measures use electrical/mechanical devices and various physical means to deny offenders access to targets.

Walls, Fences, and Gates for Perimeter Security

- Install open fencing, i.e., chain link or wrought iron, unless solid walls are needed for privacy or street noise mitigation. Open fencing does not obstruct visibility, is harder to climb, and is less susceptible to graffiti. Sharp pointed fencing can only be used in agricultural, floodway, and some industrial zones.
- Plant thorny vines along walls to deny access and prevent graffiti.
- Fences, walls, and gates should be at least 6 feet high and have no horizontal elements that a person can use to climb over them.
- Install shields on wrought-iron gates to prevent a person from opening them from the outside by reaching over or through them, or by using bars, wires, etc. to release the locks.
- Use strong springs on gates so they close securely after a person goes through.

Security Standards for Residences

Install the following:

- Deadbolt locks on all doors to the outside as well as the door from the inside of the garage to the interior of the home
- Double-pane glass windows
- Deadbolt and secondary locking devices on sliding-glass porch, patio, and deck doors
- Secondary locking devices on sliding-glass windows
- Means to prevent sliding-glass doors and windows from being lifted up in their tracks to defeat their locks
- Bars on windows that meet Fire Department release requirements
- Non-removable pins on door hinges that are accessible from the outside when the door is closed
- Flush bolts made of steel with a throw of at least one inch installed at the top and bottom of the inactive door of a set of double doors
- Fully tempered glass in doors
- Unbreakable glass or plastic in garage door windows that provides one-way visibility from the inside
- Viewing windows on the hinge side of doors. If they must be on the lock side, locate them at least 40 inches from the lock or make them of some unbreakable material.
- Locks on side-yard gates to deny burglars access to the back and sides of residences

Door and Gate Operation in Multi-family Residences and Office Buildings

- Provide individual key or proximity cards to authorized persons. They are preferred to keys or numerical keypads because: (1) they can only be used by the person possessing the card, (2) a record can be kept of their use, (3) they can used multiple doors and gates, (4) they can be deactivated when reported lost or stolen, or when a person's access is no longer authorized, (5) they cannot be duplicated and given to unauthorized persons, and (6) they would not be left in a vehicle for a thief to use to exit a garage.
- Install audible alarms on self-locking exit doors and gates to discourage people from leaving them open.
- Install a display panel in the building office that shows which doors or gates are open.

Windows and Doors in Businesses

- Install flush bolts made of steel with a throw of at least one inch at the top and bottom of the inactive door of a set of double doors.
- Use unbreakable laminated glass or clear acrylic plastic.
- Install folding security gates or roll-down security shutters inside store windows and doors.
- Where motion detectors are installed to open or unlock exit doors from the inside when a person approaches the door, set the detectors far enough back from the door so a person outside the door cannot slip something between the door and the frame to create motion on the inside and thereby open the door. Or install a shield on the outside of the door so a person on the outside cannot slip anything between the door and the frame.

Burglar Alarms

- Install a burglar alarm system and have it monitored 24/7. Use multiple sensors; they reduce false alarms.
- Provide a wireless backup that can send an alarm signal if the telephone line is cut.

Trash Enclosures and Dumpsters

- Keep enclosures locked except when the containers in it are being filled or emptied.

Secure Utilities

- Install external circuit breakers and telephone connections in sturdy boxes with shielded padlocks.
- Install circuit breakers and telephone connections internally where possible.

Secure Backflow Preventers

- Paint the device. Paint is a deterrent because painted metal is less valuable.
- Camouflage the device. Fake rocks work well. Just make sure there is a one-foot clearance around the device.
- Hide the device. Paint it green and place it in a bush or hedge. This is a low-cost measure.

- Use a device with plastic parts. Plastic is less valuable.
- Enclose the device in a protective cage or box. Must mount it securely to the ground and use a tamper-proof lock or else the thieves will steal the cage too.
- Install a locking-cable system with shielded-shackle locks and a concrete foundation.

Parking Structures, Garages, and Lots for Multi-family Residences

- Install overhead or sliding gates at the entrances and exits to control access by pedestrians as well as vehicles. Provide residents with individual key or proximity cards to open the gates. Cards are preferred over numerical keypads or remote clickers for the reasons cited in 2.c above. Require the card to be used to open both entry and exit gates.
- Provide visitor parking in a separate open area. If visitor spaces are in a garage or structure, install interior gates to secure the resident parking areas.
- Provide a separate secure parking area for residents in mixed-use developments.
- Locate open parking spaces in residential parking lots next to the buildings and carports along the perimeter of the lot away from the buildings. Individual parking spaces under buildings should be in individual garages.

Parking Structures, Garages, and Lots for Shopping Centers

- Install simple swinging-arm gates at the entrances and exits. (Drivers would take a ticket to open the entrance gate. They would give their tickets to an attendant to compute the parking fee and open an exit gate, or prepay at a machine or cashier and get a ticket to open an exit gate. Or stores could validate tickets for a certain amount of free or discounted parking.)
- Provide a separate secure parking area for employees' vehicles.

Parking Structures, Garages, and Lots for Commercial Buildings

- Install simple swinging-arm gates at the entrances and exits to employee parking facilities. Provide employees with access cards to open the gates to enter and leave.
- Provide visitor parking in a separate open.

Residential Developments

- Install gates at the public street entrance and exit of developments with private streets.
- Build houses on both sides of streets bordering an open space. And provide access to the open space at designated trailheads.

Barriers

- Install fences or other barriers to prevent misuse of public facilities or areas, e.g., bathing in fountains, camping overnight under bridges, or violating protected open spaces.
- Design benches with arm rests to discourage sleeping and skateboarding.

Roofs

- Install locking covers to shroud ladders.

- Secure hatches, skylights, ventilation shafts, air conditioning and heating ducts, and other rooftop entrances on the inside with grills or grates. Alarm those that cannot be secured.
- Install a motion detector that would activate an alarm if someone goes on the roof.

Elevator and Stairway Controls in Mixed-use, Multi-floor Residential and Commercial Buildings

- Provide separate elevators for residents. Install card readers at the elevators so residents can only go to their floors, parking garage levels, and the lobby if separate elevators are not provided. (Residents' access cards would be programmed for this.)
- Install a telephone system in the lobby for visitors to use to call for elevator-access to a residential floor, and for residents to use to visit a resident on another floor.
- Lock stairwell doors to the residential floors and parking levels on the stairwell side and install an access card reader to enable residents to enter their floor and parking level from the stairwell. Because stairwell reentry is necessary in a fire emergency provisions must be made to release the locks when a fire alarm is activated.

Elevator and Stairway Controls in Multi-floor Office Buildings

- Install card readers at the elevators so employees can only go to their office floors, parking garage levels, and the lobby. Employees' access cards would be programmed for this if employee access to the office floors is to be controlled.
- Install a telephone system in the lobby for visitors to use to call for elevator-access to an office floor if visitor access to the office floors is to be controlled. Or host employees could be called to escort visitors in the building.
- Lock stairwell doors to the office floors and parking levels on the stairwell side and install an access card reader to enable employees to enter their floor and parking level from the stairwell. Because stairwell reentry is necessary in a fire emergency provisions must be made to release the locks when a fire alarm is activated.

Territoriality

Territoriality measures define ownership and control activities in the environment. They delineate spaces with limited or no public access and guide legitimate users safely through the environment.

Boundaries

- Establish clear boundaries between public and private spaces. Use walls, fences, gates, landscaping, signs, pavement treatment, etc.
- Define ownership and uses for all spaces in a development. No space should be ignored, especially if it cannot be seen from the main activity areas.

Streets in Residential Areas

- Employ measures to reduce the amount and speed of vehicular traffic. These include two-way traffic, on-street parking, speed limits, speed bumps/humps, signs, curb indentations, signals, pedestrian crosswalks, etc.
- Create cul-de-sacs with barriers on streets that are not needed for through vehicle traffic.
- Limit on-street parking to residents, visitors, and delivery/service vehicles.

Install signs that do the following:

- Prohibit trespassing, loitering, soliciting, scavenging, consumption of alcoholic beverages, etc.
- Direct visitors to the building or development office.
- Designate visitor parking spaces, and warn that public parking is prohibited and unauthorized vehicles will be towed.
- State the hours that activities are prohibited, e.g., no visitors after 10:00 p.m.
- Inform persons of camera surveillance.
- Direct people to safe paths, emergency exits, emergency communications, etc.
- Define a code of conduct for private spaces open to the public

Maintenance

Maintenance measures allow the continued use of spaces for their intended purposes and maintain the effectiveness of measures employed for surveillance, access control, and territoriality.

Harden against vandalism

Use:

- Design features and materials that cannot easily be vandalized, stolen, or used to damage the property, e.g., don't use loose rocks.
- Graffiti-resistant paint or anti-graffiti coatings on walls, benches, light poles, signs, etc.
- Screens, wired glass, or other protection for light fixtures and bulbs.
- Shiny aluminum or shatter-resistant glass for mirrors.
- Protective films on the outside of windows to prevent window damage from graffiti, knife gouging or scratching, and acid etching.

Prevent Skateboarding

- Roughen pavement surfaces or plant grass in front of benches, planter boxes, low walls, steps, and railings.
- Plant trees at ground level and not in raised planter boxes.
- Shape the edges of seat benches and low walls.
- Install arm rests or seat dividers on flat seating surfaces.
- Design low walls, curbs, railings, and planter boxes with breaks, bumps, or height differentials.
- Install circular picnic tables and curved benches instead of rectangular tables and straight benches on concrete paving.

Landscaping

- Maintain canopies of mature trees at least 8 feet above the ground. Trim bushes to less than 3 feet except where privacy or environmental noise mitigation is a primary concern, or where higher plants would not block any views, lighting, or camera

coverage, or provide hiding places. For example, higher bushes or trees with lower canopies could be planted next to a blank wall or the side of a building.
- Locate plants with prickly leaves or thorns like bougainvillea and natal plum where access is to be controlled, e.g., along fences to discourage trespassers from climbing over them.
- Plant bushes and trees along sidewalks at ground level and not in raised planter boxes that would provide places for people to sit and loiter.

Caveats

CPTED measures employ three elements — people, devices, and design features — to deter crimes of opportunity by making it more difficult for an offender to commit a crime and escape without being stopped or detected.

Although devices and design features are important, the human element is the critical one. People in the environment must:

- Take advantage of the visibility provided to observe and question intruders.
- Report suspicious behavior and criminal activities.
- Use the access control measures provided to keep intruders out.
- Use security measures to protect themselves and their property.
- Exercise control over their environment.

But even all of this will not stop many types of offenders. Other concepts and strategies will be needed to deal with offenders who are:

- Determined and skillful in defeating surveillance and access control measures,
- Irrational in their behavior,
- Acting as a member of an organized gang,
- Under the influence of drugs or alcohol,
- Reckless or undeterred by the risks of detection and apprehension,
- Unconcerned about possible punishment, or
- Legitimately in the area.

The need for the community, police, and other agencies and organizations to work together as partners to employ other concepts and strategies is especially critical in dealing with gangs. This is because organized gangs can also use surveillance, access control, and territoriality measures, along with terror and intimidation, to make an environment safe for their criminal activities.

Finally, CPTED measures do not deal with many types of crimes that occur in social, home, and business environments. For example, they do not help to prevent crimes in which the victim knows or provides access to the offender, i.e., domestic violence, child abuse, acquaintance rape, substance abuse, workplace violence, fraud, and forgery. Counseling, education, enforcement, and other measures are needed to deal with these situations.