



DIVISION VI
Section H

Crime Prevention Through Environmental Design

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INTRODUCTION

The concept of Crime Prevention through Environmental Design (CPTED) is becoming recognized worldwide as an effective tool in reducing crime when used in conjunction with other law enforcement strategies. Research and case studies have shown that the proper, safe design of the physical environment can result in a lower incidence of crime, a higher perception of safety, and an overall increase in quality of life. In fact, many of the same quality-of-life techniques that make communities more attractive and more neighborly can also prevent crime.

The majority of crime, ranging from attacks on one's person or property to damaging the environment by dumping used motor oil into storm drains, occurs because an opportunity to commit the crime exists and the chance of detection is low or non-existent. The inability to commit crime unseen by others will discourage most offenders.

Criminal opportunity can be removed or reduced by designing the physical environment in ways that enhance citizen interactions and increase the likelihood that no criminal act will go unnoticed. The perception of safety plays a crucial role. People tend to avoid areas that are perceived as unsafe. Activity, on the other hand, promotes the feeling of safety. A parking lot which is hidden behind a building or out of sight of activities feels unsafe, while one that is located in front of the building or on a busy street feels safe. Creating attractions which draw people into areas and situating the areas so they can be observed by others increases feelings of security and safety. A properly designed site makes the user feel safer and the offender feel at greater risk of exposure.

CPTED is based on four basic principles:

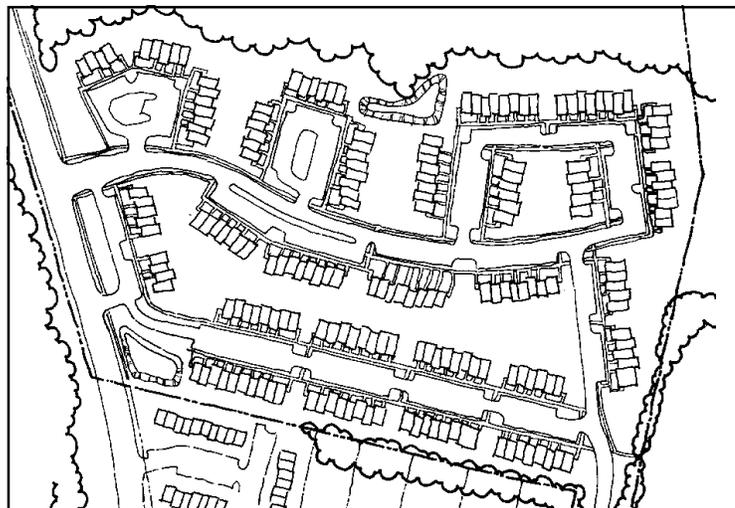
1. Natural surveillance: the placement of physical features, lighting, activities, and people to

maximize the ability to see what's going on while ensuring that intruders will also be observed.

2. Natural access control: the judicious placement of entrances, exits, fencing, landscaping, and other physical design elements to discourage access to an area by all but its intended users. Limiting ingress and egress from parking lots, facilities, and buildings also allows pedestrian and vehicular traffic to be channeled, thereby creating more opportunity for people to be in view of others and leaving fewer opportunities for criminal acts.

3. Territorial reinforcement: the use of buildings, fences, pavement, signs, exterior paint colors, street furniture, and landscaping to establish boundaries that express ownership and delineate private from public. Physical design can help the users of a space develop a sense of "proprietaryship." People protect territory that they feel is their own and have a certain respect for the territory of others. Identifying intruders is also much easier in a well-defined space.

4. Maintenance and property management: A poor state of repair or indifferent management practices express a lack of concern



In this conventionally designed townhouse project, the linear arrangement of units and parking lots makes it difficult to know one's neighbors and to establish a sense of ownership. Recreational open space is not defined by the site layout.

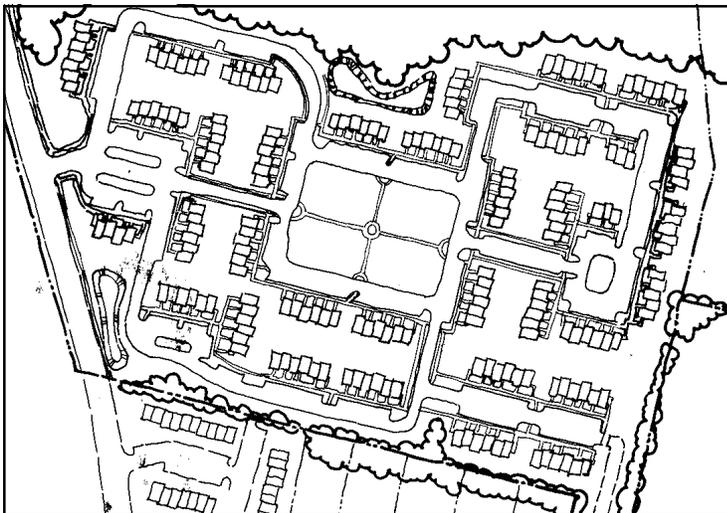
for the property and create easy targets for criminal activity. Consideration for minimizing maintenance requirements should be given when the project is planned. For example, plant material should be selected for its size at maturity to minimize the need for pruning. Using quality, durable materials will also reduce maintenance requirements.

CPTED strategies can be used in a number of ways, in both interior and exterior spaces, individual buildings, or entire neighborhoods. Incorporating CPTED in the initial design of projects will prevent the need to take more costly steps later, improve the efficient use of county resources, contribute to the sustainability of communities, and limit premise liability on the part of property owners and landlords.

Premise liability issues are emerging as an important consideration in the development and management of property. More and more frequently, victims of crime are seeking compensation from the owners and managers of the properties on which the crime took place. The victims argue that the property owner failed to provide adequate security and thereby

contributed to the occurrence of the crime. Although these cases often involve specific charges, such as lack of security guards or poor lighting, many have tested the principles of CPTED. Courts have ruled that good security planning is highly effective in deterring crime, and poor security planning not only fails to prevent it, but actually acts as a crime magnet, thereby increasing the risk that crime will occur. Developers and property owners who incorporate proactive CPTED design will both reduce the likelihood that crime will occur on the premises, and, in the event that it does, will provide a strong legal defense.

The safety of communities can be improved by following the CPTED guidelines provided in this section. Planners, engineers, landscape architects, and architects should incorporate the appropriate guidelines to create attractive and appealing developments. A high quality, aesthetically pleasing environment will present an image of caring and vitality, which in turn will foster citizen interaction and use of public areas. Combining the concepts of creative design and crime prevention will result in safer communities where people really enjoy living.



CPTED design organizes units in small groups to promote a sense of territoriality and places the recreational open space in a central, readily observable location.

APPLICATION OF THE GUIDELINES

The CPTED guidelines are advisory and are meant to provide design strategies which reduce opportunities for crime. It may not be possible for a project to meet every CPTED guideline. Some strategies may have greater importance or appropriateness for different development sites and surrounding conditions. In some situations, a CPTED guideline may conflict with another regulation. However, variations from specific guidelines should be compensated by improvements which contribute to making the project safer overall. Where community plans have addressed CPTED issues, those CPTED guidelines should take precedence.

1.0 SITE PLANNING

- 1.1 Use building orientation, location, and alignment to existing streets to convey the relationship of the development to its neighbors. For example, buildings set close to the street invite public access, while buildings set back from the street create a sense of privacy.
- 1.2 Avoid large setbacks to facilitate observation and movements of people and traffic. Buildings that are set back from the street by long entry roads or vast parking lots are also less likely to be patrolled by local authorities than buildings close to the street.
- 1.3 Orient building fronts to the major street.
- 1.4 Delineate the public and private spaces of the development. The edge treatment provides the initial impression of how the site responds to its surroundings, communicating to the public its accessibility and level of privacy. Where appropriate, use fencing, walls, trees, a low hedge, or grading to impart a sense of boundary between public and private spaces. A coordinated street treatment which incorporates continuous sidewalks and street trees wrapping the property defines the public path and distinguishes it from the private property.
- 1.5 Set building grades higher than the street and parking areas to facilitate visibility of these areas.
- 1.6 Provide strong connections for the site users. Emphasize the major access point so all users are directed to it, providing increased natural surveillance. For



When building setbacks are minimized, public access and activity are invited, increasing opportunities for natural surveillance.



Buildings set back from the street create private space. The edge treatment, which includes a thick hedge and tree row, further increases the sense of privacy. Since opportunities for natural surveillance from the street are minimized, surveillance from users within the site becomes more important.



A strong main entrance design directs users and promotes identity for the development.



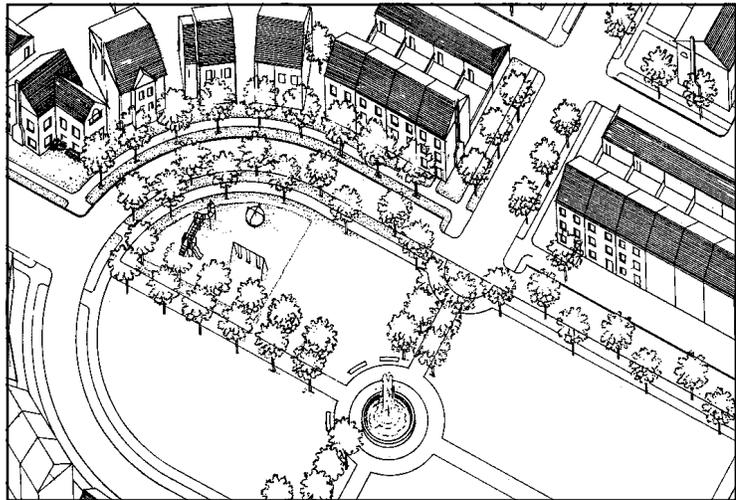
An open space activity area located within a cluster of residential buildings facilitates interaction among the residents as well as providing a high level of visibility.

example, providing a row of trees leading up to the main entrance creates a clear view corridor, and establishes a formal entrance to the building or development.

- 1.7 Avoid creating “entrapment spots,” or confined areas adjacent or near a well-traveled route that are enclosed on three sides by a barrier such as walls or bushes.
- 1.8 For multiple building developments, cluster buildings into comprehensible groups within the framework of the development so that the residents/users can easily recognize and identify their neighbors. Site buildings so that the windows and doors of one building are visible from another.
- 1.9 Cluster buildings around a common parking lot or open space to facilitate monitoring of the space.
- 1.10 Divide the site into identifiable functional areas using roads, parking, fencing, planting, etc., to reinforce the division and distinguish areas for public or private use.
- 1.11 Create defined activity areas to increase the visible use of the site.
- 1.12 Personalize the environment with street furniture, paint colors, window boxes, and landscaping.
- 1.13 Provide a continuity of architectural and landscape elements such as building style, lighting, signage, plant material, etc., that identify an area that is associated with a particular neighborhood or development.
- 1.14 Design stormwater management facilities as visual amenities that are visible from the building or street.

2.0 OPEN SPACE

- 2.1 Locate all public open spaces and recreational facilities to maximize natural surveillance from buildings, public roads, and walkways.
- 2.2 Clearly delineate the boundaries of public open spaces and their access routes through grading, path locations, landscaping, or fences.
- 2.3 In residential developments, parks, recreational facilities, play lots, and local open spaces should be designed as a focal point of the development. Centrally locate the major open space or park within the development to make it convenient and encourage use.
- 2.4 In residential developments, organize the public or local open space areas so that they are “assigned” to contiguous clusters of dwellings. Use landscaping or other physical changes to establish boundaries.



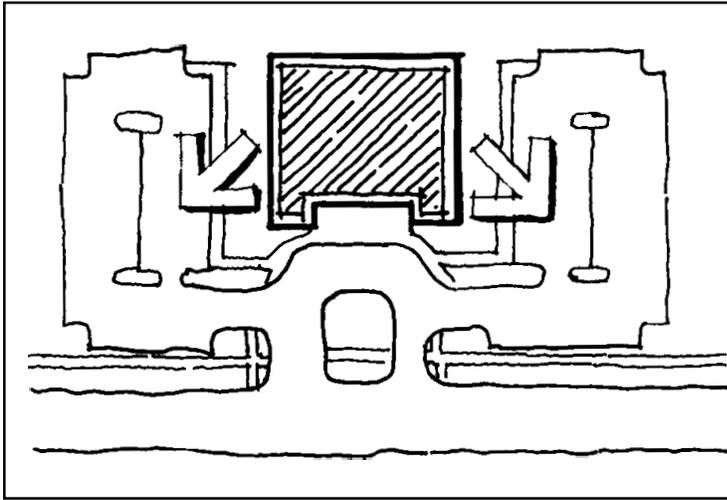
A central open space is the focal point of this housing layout.

3.0 ROADS

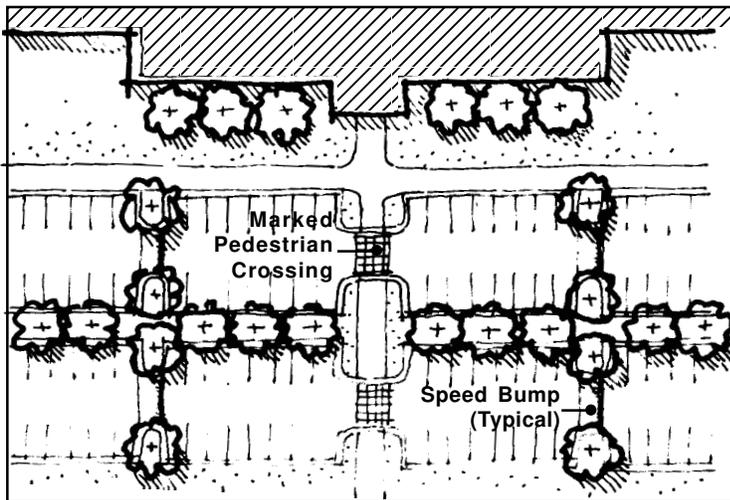
- 3.1 Design the road network to serve the users of the development, and discourage use by others.
- 3.2 Limit the length of roads within projects and the number of ingress and egress points to reduce speeding and potential cut-throughs. Balance the need for access control with the need to create interconnections between neighborhoods to relieve traffic congestion and provide emergency access.
- 3.3 Limit the length of cul-de-sacs to encourage increased intra-neighborhood observation and interaction.



This outdoor activity area is defined by paving, planting, and a trellis, and is in full view of the building.



Design parking as small pods immediately adjacent to the buildings they serve, and oriented to be visible from windows.



Use islands to facilitate pedestrian movement in parking lots. Mark pedestrian crossings through interior roads and parking aisles. Consider speed bumps to slow traffic.

4.0 PARKING

- 4.1 Design parking areas as small pods immediately adjacent to the buildings they serve.
- 4.2 Avoid remote parking areas that are not observable from the road or adjacent buildings.
- 4.3 Orient parking spaces so they are easily visible from adjacent windows, doorways, and walkways.
- 4.4 Limit the number of ingress and egress points to provide natural access control.
- 4.5 Avoid long straight layouts that allow cars to speed through the lot endangering pedestrians. Use traffic calming devices such as speed bumps to control speeding. Landscaping, providing it does not obstruct lines of sight, is a useful psychological influence to slow drivers down.
- 4.6 Use parking lot islands to accommodate pedestrian movement through parking lots. Mark pedestrian crossings on interior roads and parking aisles.
- 4.7 Provide conveniently-located, assigned parking spaces for residents, employees, patrons and/or visitors where appropriate in private parking lots. Do not, however, mark parking spaces with unit numbers, which could indicate which residences or businesses are unoccupied.

5.0 WALKS AND PATHS

- 5.1 Provide sidewalks along streets to encourage pedestrian traffic.
- 5.2 Exterior pedestrian routes should be well-defined with smooth walking surfaces, adequate lighting, and landscaping that allows visual access while providing shade.
- 5.3 Route paths past areas where the public is likely to congregate or frequent. Take advantage of natural opportunities to bring people into contact and increase interaction, e.g., playgrounds, information kiosks, mailboxes, trash collection sites, etc.
- 5.4 Keep walks and recreational paths in view of as many buildings and roads as practical; however, avoid placing them too close to housing units to prevent intrusion into private areas. Avoid jogs that create concealed areas or limit visibility.
- 5.5 Locate walks and recreational paths along natural pedestrian routes to facilitate pedestrian traffic.



Sidewalks along the street direct pedestrian traffic. This one uses a curvilinear alignment with street trees and low level landscaping.



This sidewalk design, with accompanying landscaping and lighting, directs pedestrians from the parking lot to the building.



Paths routed within view of buildings increase opportunities for natural surveillance.



Removal of the underbrush in this wooded setting reduces potential hiding places and improves the feeling of safety for pedestrians.

- 5.6 Avoid “movement predictors,” or routes that pass by or end up at predictable locations that are isolated or potential entrapment areas.
- 5.6 In naturally vegetated areas, keep underbrush and other vegetation clear of paths to provide comfortable sight distances and allowing ample time to perceive any hazards. Avoid landscaping that creates hiding places near paths and walkways.
- 5.7 When paths lead into wooded or landscaped areas, provide an alternate route that is in clear view of roads or houses.
- 5.8 Provide access points along pathways for emergency and security vehicles.
- 5.9 If bicycle parking facilities are provided, locate them in a highly visible area near the main entry, maintaining a separation between bicycle and vehicular traffic.

6.0 BUILDINGS

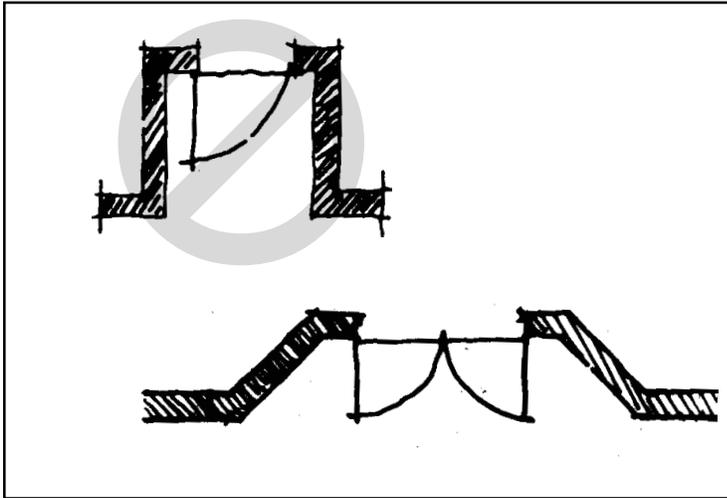
- 6.1 Place the main point of entry at the front of the building. Keep secondary entrances to a minimum.
- 6.2 Entrance design should provide a safe, well-lit, protected shelter for people entering the building. Clearly define public entrances with walkways and signage, accentuated with architectural elements, lighting, landscaping, special paving treatments, or other features.
- 6.3 Encourage use of front yards in the design of residential buildings to improve natural surveillance. Incorporate porches, and delineate private territory with attractive fencing and/or landscaping, where appropriate.
- 6.4 Where building walls undulate or project, dark niches are created where people could hide. Reduce potential hiding places by planting shrubs, or providing recessed exterior lighting or windows.
- 6.5 Where doorways are recessed into the building facade, angle the corners to improve visibility.
- 6.6 Add windows on all facades to provide visibility outside. Windows and exterior doors should also be visible from the street or by neighbors.



Incorporate porches, balconies, and strategically placed windows to allow natural surveillance of the street. Delineate public and private spaces with fencing and landscaping.



Reduce potential hiding places in building wall offsets by adding windows, plantings, or lighting.



Angle the building corners of recessed doorways to improve visibility.



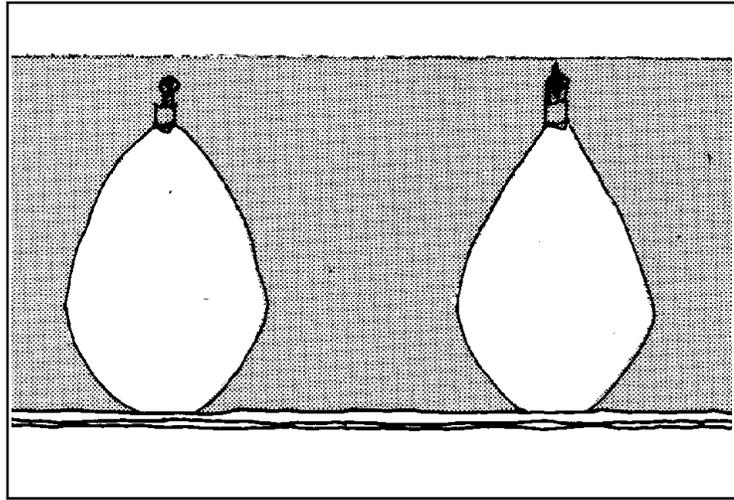
When garages are projected, the ability of adjacent neighbors to provide mutual surveillance is diminished.

- 6.7 Locate drive-throughs and ATM machines for maximum visibility from the road or from the interior of the building.
- 6.8 Place interior activity areas, such as the lunchroom or water fountain, to overlook the parking lot to increase opportunities for natural surveillance.
- 6.9 Locate laundry rooms, storage lockers, and other convenience facilities such that visibility from outside is enhanced. Users and passersby should be able to easily observe potential dangers and avoid them.
- 6.10 Design and locate loading and service areas and ancillary buildings and structures, such as garages, sheds, and dumpster enclosures, to maximize visibility and reduce potential hiding places.
- 6.11 Where garages are oriented to the street, locate them near the front entrance to the house. Projecting the garage can interfere with the mutual surveillance of the houses opposite.
- 6.12 Provide enclosed garages rather than carports to minimize opportunities for auto theft.

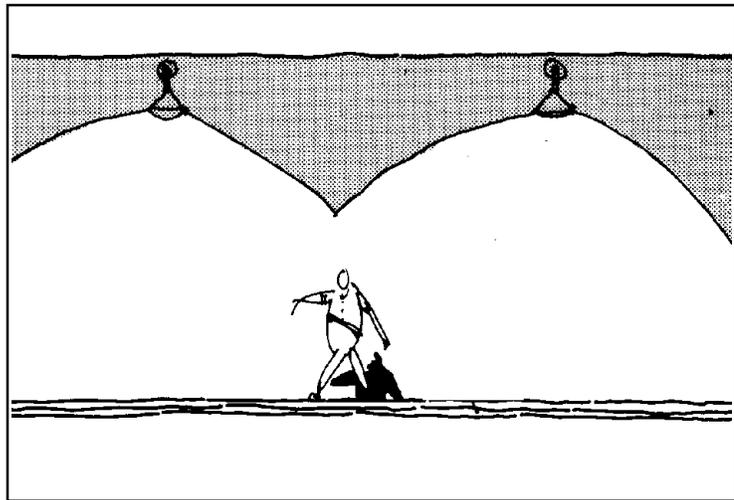
7.0 LIGHTING

Projects should be designed with an understanding of how they will be used during the night as well as during the day. Adequate lighting of activity areas at night is crucial to providing a sense of safety and security. In fact, proper lighting is one of the best and the least expensive psychological deterrents to crime. It causes the intruder to think about being observed, and usually to choose a less-illuminated target. Good lighting also averts injuries that can occur if visibility is obscured. Light fixtures are, however, frequent targets of vandalism. The proper selection and installation of adequate fixtures is critical.

- 7.1 Use a professional lighting engineer to design the lighting plan.
- 7.2 Anticipate how the site will be used at night and provide appropriate lighting for all activity areas. Do not provide lighting for recreational areas where there are no planned activities nor opportunities for natural surveillance at night.
- 7.3 Minimize glare and limit light trespass into neighboring properties by using only full cut-off lenses.
- 7.4 Provide adequate and uniform lighting levels in compliance with the Illuminating Engineering Society of North America (IESNA) standards, as periodically revised and updated.
- 7.5 The values listed by the IESNA should be the average maintained footcandles. The light output of luminaires depreciates with use and the lighting installation should be based on maintained levels, rather than initial values.



Avoid creating dark spots from using building light fixtures which cast vertical lighting patterns.



Place building light fixtures to provide broad horizontal lighting, eliminating hiding places.



Coordinate the placement of light fixtures and landscaping to ensure that the lighting will not be obscured as the plants mature.



Adjust the lighting design to suit different needs. For example, mount lighting fixtures on higher poles to cover large areas, such as parking lots. Use lower mounting heights for the pedestrian spaces adjacent to the building.

- 7.6 Illuminate all sides of the building where activity is anticipated, and include the exterior doorways, garage doors, fire escapes, roof entrances, basement windows, and gates.
- 7.7 Install fixtures to cast a light pattern over a broad horizontal area rather than a tall vertical area. Light colored surfaces reflect light more efficiently than dark colored surfaces.
- 7.8 Use only vandal-proof lighting. Lights on building walls should be flush-mounted or recessed and covered with an impact-resistant material.
- 7.9 Coordinate lighting design and placement with other landscape elements, including planting, signs, walls, trash enclosures, and site grading, to ensure adequate lighting levels and avoid the creation of blind spots, glare, shadows, or difficult-to-see locations.
- 7.10 Avoid glare by keeping mounting heights at least 12 feet above walkways and driveways. Avoid directional and spot lighting where drivers or pedestrians travel towards the fixture.
- 7.11 Select lamp types based on security needs as well as cost and efficiency. Security issues involve color rendition, and the length of time a lamp takes to restrike should a power outage occur. A mixture of lighting types may be appropriate. For example, use lamps that provide white light, such as metal halide, halogen, or incandescent, near entrances where color rendition is important to identify individuals. Use less expensive lamps such as high pressure sodium lamps, which provide yellow light, in the parking lot where detection of movement is the primary concern.

8.0 PLANTING

8.1 Use planting to project an image of caring, quality and identity, define edges and entrances, create continuity and scale, provide shade, and screen undesirable views.

8.2 Arrange planting areas to delineate public areas such as parks, playgrounds, parking lots, building entrances and walks while allowing for natural surveillance. For example, use a tightly spaced row of trees, incorporated with low-growing plants, to define an edge leading to the entrance or opening. Generally, low-growing deciduous and evergreen shrubs (36" maximum) planted with high-branched deciduous trees (branches and limbs removed up to at least 8'-0") will separate private from public spaces while providing adequate visibility of the public areas.

Some low-growing shrubs which will require little to no pruning include:

Berberis thunbergii atropurpurea
'Crimson Pygmy' (Crimson Pygmy Barberry)

Buxus sempervirens 'Vardar Valley'
(Vardar Valley Boxwood)

Ilex crenata 'Green Luster'
(Green Luster Japanese Holly)

Juniperus chinensis 'Pfitzeriana Compacta'
(Compact Pfitzer Juniper)

Nandina domestica 'Nana'
(Dwarf Nandina)

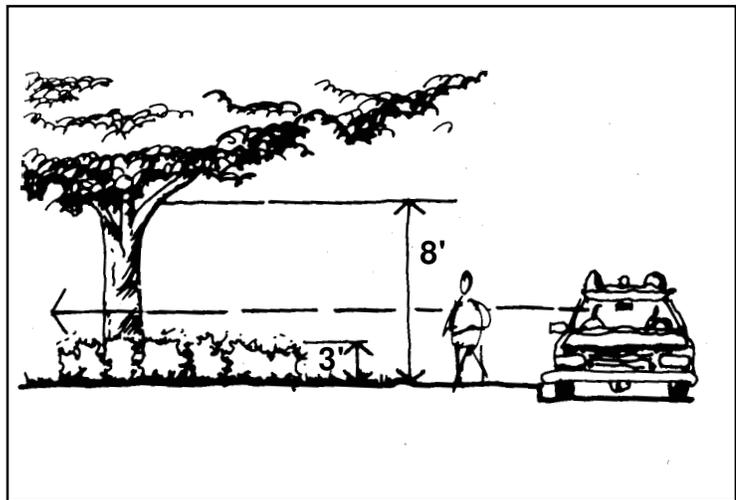
Philadelphus 'Manteau d'Hermine'
(Manteau d'Hermine Mockorange)

Rhododendron sp.
(Selected Azalea species)

Rhus aromatica 'Grow-Low'
(Grow-Low Fragrant Sumac)



Use tree rows to delineate edges and guide users through a space.



When using plants to delineate edges, maintain visibility by using low growing shrubs and high branched trees.



Prune around the bottom of tall shrubs to permit visibility behind them.



Low foundation plantings combined with deciduous trees allow unobstructed views of doors and first-floor windows.

Rosa sp.
(Selected ground cover rose species)

Spirea japonica 'Little Princess'
(Little Princess Spirea)

8.3 For landscaping screens of parking lots, storage, or service areas, the use of taller shrubs for buffering may supercede the desire to maintain visibility. In some cases, an informal planting pattern with frequent breaks to permit visibility may be appropriate.

8.4 Use mass plantings and hedges to control pedestrian movement. Plants that provide good access control because of thorns or prickly leaves are listed below:

Berberis sp. (Barberry)
Chaenomeles sp. (Quince)
Pyracantha sp. (Firethorn)
Rosa sp. (Rose)
Yucca sp.

8.5 Select and locate plant materials that will maintain an appropriate height and not obscure sight lines. Taller hedges can be pruned up to allow one to see someone hiding behind them.

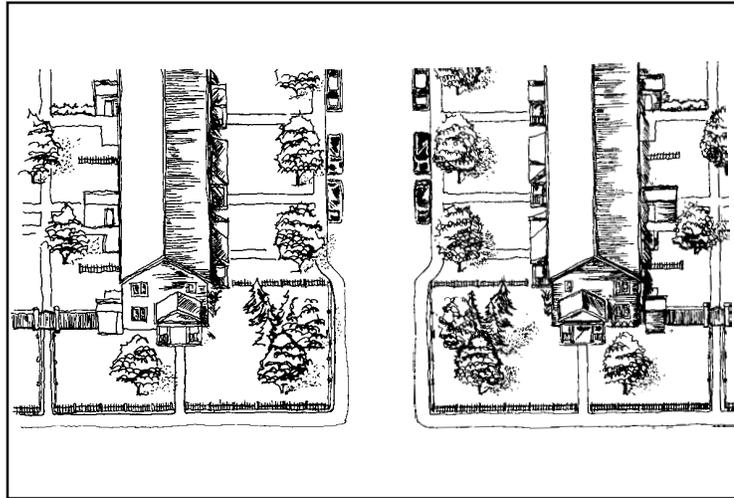
8.6 Use low-growing plants at building entrances, corners, and below first floor windows.

8.7 Landscape parking lots so that users may be seen from appropriate vantage points, i.e., building entrances, windows, street, and sidewalks.

8.8 Provide breaks in landscape screening of stormwater management ponds to facilitate observation and reduce opportunities for these areas to be used for dumping of trash and other crimes.

9.0 WALLS AND FENCES

- 9.1 Use walls and fences to define boundaries and distinguish private and public areas.
- 9.2 Use fences to buffer residential properties from commercial areas and discourage trespassing.
- 9.3 Consider using fences to define forest buffers, local open spaces, and park areas to prevent cut-throughs and dumping.
- 9.4 Avoid using solid fences and walls where visibility is desired. To discourage cut-throughs, fences and walls should be at least 4 feet high.
- 9.5 Place walls and opaque fences sufficiently back from walks to avoid creating blind spots.
- 9.6 Angle fences and walls around corners to provide visibility.
- 9.7 Avoid placing retaining walls where the downhill side is not visible or cannot be secured.
- 9.8 Consider alternative materials to chainlink fencing where the fencing is visible to the public. Wrought iron, or tubular aluminum or steel fencing is more attractive, presents a positive image, and is durable and resistant to vandalism.



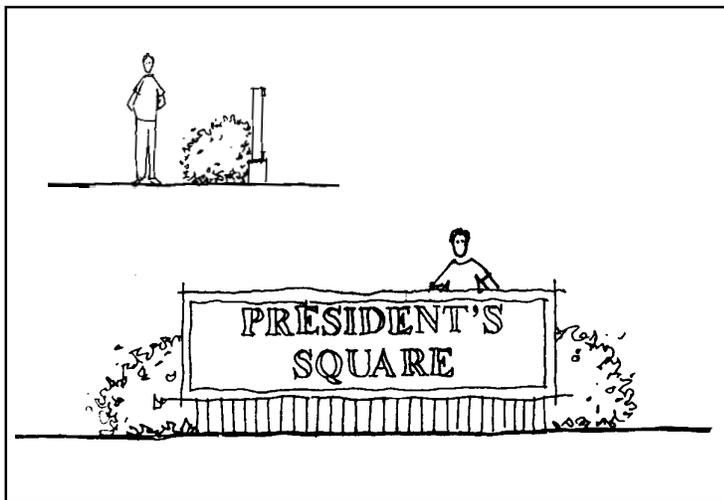
Use fencing to delineate private outdoor areas.



Attractive fencing presents a positive image in addition to controlling access.



Community signage reinforces neighborhood identity and territoriality.



Design free-standing signs to eliminate potential hiding places.

10.0 SIGNAGE

- 10.1 Provide street addresses that are well-lit and visible from the street. Numbers should be a minimum of five inches high and made of non-reflective material.
- 10.2 Provide neighborhood identification using signage and associated landscaping at major access points.
- 10.3 Provide adequate, well-lit directional and informational signage to facilitate the users' ability to find their way.
- 10.4 Design signs so that they cannot be used for persons to hide behind. Signs should be well-lit.
- 10.5 Avoid cluttering windows of commercial buildings with posters and other signs so that activities within and outside the building are readily observable.

