



# Prevent

## Crime with Defensive Architecture

by Cynthia Scanlon

**M**ark Salem used to hate Monday mornings. He'd arrive at work to confront the damage that had been done to his auto repair business over the weekend. Thieves would steal cars, break out windows, rip up dashboards to steal car stereos, and take tools, batteries, and even a cash register. Burglars were killing Salem's business. But the theft and destruction came to a halt 18 months ago when Salem relocated and hired architects who applied the concept of "designing out crime" to his building.

Salem, a former Scottsdale, Arizona, police officer, installed high-tech security systems, cameras, and motion detectors. Razor-sharp metal is strung along the tops of 2.4 m to 3.4 m (8 ft to 11 ft) high walls that surround the parking lot. Heavy locked doors require keys on both sides, and windows are 13 mm (½ in.) thick and shatterproof.

Salem has yet to suffer a break-in at his new location. But even more interesting is that the design of Salem's building, with its fluorescent lights and palm trees, is so attractive that it won a design award.

### "Designing In" Security

Business owners, architects, designers, and contractors are realizing that a building can be designed or remodeled to increase security and protect its occu-

### Balancing Security and Aesthetics

Architect Oscar Newman coined the term "defensive space" in 1969, noting that buildings safely designed with crime prevention in mind would return control of the area to owners. Defensible space does not mean that buildings have to be ugly, fortress-like structures where occupants are willing prisoners. Rather properly designed buildings lend a feeling of safety and power to their occupants, making them less afraid and vulnerable. As evidenced by Salem's design award, defensible space can be attractive and innovative.

When Steely began his career as a police officer, he dealt with crime prevention but never considered it a matter of design. After being sent to a CPTED school, he says he became a believer in environments that manage behavior. It is now his mission to pass on what he has learned and to assist in designing or redesigning buildings to be aesthetically pleasing but to minimize opportunities for burglaries, robberies, rapes, vandalism, or assaults.

"We're not being punitive, just helpful, and we try to be early in the markup sessions to make it happen," Steely says. "We sometimes have problems with architects who don't understand the concept, but we see the victims.

"Some people ask me, 'Does this really work?' Yes it does," he added.

He explains how our ancestors used the principles CPTED teaches: maximized use of sunlight and moonlight, defensive placement of homes on the side of a cliff, and creating only one entrance and exit.

Contractors, planners, and architects can find Steely poring over blueprints, carefully checking every design that comes across his desk. Anyone wanting a building permit in Tempe must get Steely's approval. While it can be inconvenient for some, Steely says he wants to ensure that everyone fully protects themselves.

"We haven't succeeded at a lot of crime prevention programs, so I think this program has a lot to offer the community," he says. "If you design your building right in the first place, it will be there forever. And as planners, if we don't design a safe

environment, then we haven't done our job."

### Steps for Security

Steely advises architects and planners that proper defensive architecture begins with the *territory* and the central belief that we always take better care of something we own.

"Ownership fosters the type of behavior that challenges abuse," he says. "You have to create something so that the abnormal user feels challenged in that space. This minimizes the risk of crime and moves it on to someplace more vulnerable."

Some of Steely's recommendations for securing territories include:

- Never use landscaping and planting materials that will be more than 0.6 m (2 ft) tall in parking islands, inside perimeter or screening walks, or within 15 m (50 ft) of access doors. If they are already there, remove them.

- Construct walls around the perimeter of a building that are 2.4 m (8 ft) high instead of 1.8 m (6 ft) to make them more difficult to scale.

- Make sure decorative wrought iron does not provide a foothold that will help someone jump the fence. Simple bars are best.

- Do not put river rock next to a parking lot, especially next to a bar. "It's like having Scud missiles on site," Steely says. "People pick them up and use them as a weapon, break windows and locks, and assault people with them. If you have to use river rock, grout it in."

*Natural surveillance* can be gained through proper lighting or window placement. "When we go to a restaurant with all our belongings in our car, we want to park where we can see our car," Steely says. Placing a company's breakroom where it overlooks the employee parking lot is also a good idea. Transparent fences are better than walls to monitor activity on the other side, but a wall is better than nothing.

Design landscaping to enhance safety and surveillance instead of obstructing it. And, of course, buildings should have the proper application and distribution of

pants. If customers don't feel safe walking or driving down a street, they will avoid the businesses located there.

Police officers realize it, too. The Tempe, Arizona, Police Department has created a program called Crime Prevention Through Environmental Design (CPTED). The program advises businesspeople, city planners, architects, and contractors of the risks of their buildings and how they can design in safety and cut out crime.

"Proper design and effective use of a building environment can lead to a reduction in crime and the fear of crime, thus enhancing the quality of life," says Dick Steely, a 30-year veteran of law enforcement and coordinator of the Tempe Police Department's CPTED program.

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light. "These things make the normal user feel good and make the abnormal user feel like somebody is watching them," he says.

Steely recommends the following to build in natural surveillance:

- Parking lots, refuse areas, aisles, walkways, and recess areas should be illuminated with a minimum 22 lx (2 footcandle) of light between sunset and sunrise. Light must always reach the surface of an area and not get lost above the trees.
- All entrances should be illuminated with a minimum 54 lx (5 footcandle) at ground level and 2.1 m (7 ft) vertical with a radius of not less than 4.6 m (15 ft) from the center point of the entrance. All exterior lighting fixtures should have vandal-proof and weatherproof covers.
- Address numbers should be 300 mm (12 in.) high, illuminated, and free from obstructions such as landscape.
- Light switches in rest rooms should be keyed or remotely controlled so that

Transitional lighting, which gradually increases or decreases as a person moves from one area to another, is excellent for laundry and mail rooms, refuse locations, pool and spa areas, tennis courts, breezeways, and especially entry areas to apartment units. Transitional lighting allows the eyes to adjust to changes in lighting gradually without squinting.

Steely says he would like to see transitional lighting used in and around ATM machines as well. ATMs are usually designed out of the way, many times in secluded areas surrounded by bushes for aesthetic reasons. When safety concerns arise, much of the solution is to add more light.

The answer isn't more light, Steely explains; it's how that lighting is used in the residual area. "When you walk up to an ATM, your eyes are adjusted to the bright light. But the bad guy is off to the side waiting for you. When you turn around, you've lost your night vision and

wants to be stuck. They don't want to be hurt, caught, or seen either."

Steely says criminal behavior is like that of a cockroach. "If you give a cockroach an opportunity or a morsel of food, they'll be there eventually," he says. "If you don't do anything to prevent that cockroach from coming, they'll multiply. But when you turn the light on, they disappear.

"Those who do more to discourage cockroaches by a monthly application of spraying have less of a chance of being victimized," he adds.

Steely advises considering the following concerning access points:

- How many people drive into a site?
- How many opportunities are there for a bad guy to escape?
- Is the community gated? While not foolproof, gating residential apartment and condo communities increases territorial feelings among neighbors and tends to keep undesirables out. If an area looks like it will be trouble to get into or out of,

## Criminals shake the pole and take the lamp out of commission. Thieves can

employees or customers are not surprised by someone waiting for them in the dark.

- Don't put rest rooms at the ends of remote hallways. That's just what a criminal wants: isolation.

*Lighting* is one of the most misunderstood concepts in defensive architecture, according to Steely. For instance, traditional lighting in apartment communities is the "lollipop light," a frosted plastic or glass globe mounted on top of a 1.8 m tall by 50 mm (2 in.) round pole with a 60 W to 75 W incandescent light bulb.

In the law enforcement community, these lights are known as "shake-and-break." Criminals shake the pole and take the lamp out of commission. Thieves can darken an entire apartment complex in a matter of minutes.

It is better to install high-intensity discharge lamps, which are now being widely used for security lighting. They are more expensive, but they are not usually prone to vandalism and have a long-life lamp, more light output per watt, and energy efficiency.

your night peripheral. They can see you well. You can't see them at all," he says.

When examining lighting concerns, Steely recommends hiring a reputable lighting engineer or designer to assist in providing a site-need assessment, blueprints, and a timetable for installation. To avoid conflicts, have lighting specialists and landscape architects work together. Also consider the color accuracy of the lamp source so objects and people are readily identifiable in the light.

Good defensive architecture design also encompasses *access control*, which includes "target hardening" through quality deadbolts and other mechanical means and the proper use of landscaping. This can mean planting thorny bushes that will make it difficult for intruders to enter through a window or other area without a struggle and locating certain landscape features to prevent people from loitering.

"We're not trying to take away from aesthetics, but a burglar would not want to cross over a bunch of prickly stuff to get to your window," Steely says. "No one

criminals will opt for something easier down the road. "If the bad guy feels like he has only one opportunity to leave by, that's not good for him," Steely says.

- Employee service doors should have a minimum of 150 x 150 mm (6 x 6 in.) laminated security windows centered and no more than 1420 mm (56 in.) from the bottom of the door.

Steely stresses that if police aren't a part of the preliminary stages of planning a building, in many cases they will become involved afterward by constantly patrolling the area and answering 911 calls.

### Limiting Liability

There is a growing trend of businesses being held accountable and sued by people attacked on their premises. Hotels, retail shops, bars, restaurants, apartment buildings, banks, grocery stores, and convenience stores are major targets for such lawsuits.

In an effort to limit these suits, convenience stores, one of the hardest hit tar-

gets, have started installing glass around their buildings for unobstructed views. They are also positioning cashiers at "command posts" so they can see down store aisles and out into parking lots.

The biggest deterrent to criminal behavior is for criminals to think they are being watched, Steely contends. If employees have a clear line of vision from their buildings out to parking lots and around those buildings, criminals are less likely to lurk.

Owners of the Thirsty Beaver Bar & Grill, a pub close to Arizona State University in Tempe, Arizona, knew they had taken on additional risk as a bar located in a college community. Rather than inviting trouble, they listened to Steely and made inexpensive design changes.

Those changes included a well-lit parking lot with light hitting the surface and not lost in trees. Extensive windows along the walls of the bar look out onto the

new design will heighten surveillance of the park by neighbors and visitors.

A transparent fence will also be erected around the structure to allow people to see in or out. A nearby roadway will be designated one way to slow cars and prevent cruising and loitering. Thorny bushes will be planted along walls to discourage graffiti. Special paint will be used to make graffiti removal easy.

It is the job of architectural firms like Architekton to ensure that all crime possibilities are minimized or designed out of plans before Steely sees them. Salvatore and his colleagues see their jobs not only as planners but as detectives. They ask themselves questions about property and try to find dangerous areas in plans. For instance, if a woman is attending a conference at a hotel in a large city and has to walk across the parking lot at 10 o'clock at night, how safe is the surrounding area?

"Are there places she's going to walk past where somebody can jump out and

equips its employees with a panic beeper for when they are alone and being held at gunpoint. "It sets off an alarm at the security station, and they send the police," he says. "Technology is helping out, but good common sense in design principles is now being thought about in designing these facilities."

### Practice Defensive Architecture

The police department and architects can only do so much. So, like Salvatore and his crew, be a detective. Take a walk around the building, or a mental walk around the blueprints, and ask, "If I were to break into this building, how could I do it?"

Ask two or three staff members to participate and take notes. Are the windows easily accessible? Is the perimeter wall easy to climb and without any bushes or other obstructions? Does ornamental iron provide a "helpful foot up?" Could someone get on the roof quickly? Is the skylight big enough to go through? Be creative. Criminals will be.

Then take the same test at night. Chances are, buildings look much different at 10 p.m. than they do in the middle of the day. Buildings and parking areas that look safe and attractive during the day can take on a dangerous and menacing contrast at night. You will probably spot things that are unnoticeable in the light of day.

How deserted is the area? Are undesirables loitering around—people you never thought about during the day? Are there dark areas where a burglar could work on a window without being noticed for long periods of time?

Write everything down and then put steps to defensive architecture into practice. Many of them are inexpensive, and in many cases, they are much cheaper than filing a robbery report and insurance claim for damages. ♦

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## darken an entire apartment complex in a matter of minutes.

parking lot, and a surrounding wall is 2.1 m (7 ft) high and has thorny bushes all around to make it more difficult for people to climb over.

Architekton, a Scottsdale, Arizona-based architectural firm, is currently incorporating many CPTED principles into its projects. Two of note are a \$3.4 million police substation and the \$4.4 million Escalante Park Community Center.

"We take a look at the building's design to see if there are spaces in there that could easily conceal crime," says Joseph Salvatore, principal for Architekton. "We didn't think it would come to this point, and it's unfortunate that it has. We live in a very violent society right now, and we have to be responsible."

The architectural firm specializes in designing out elements that might entice criminals. For instance, two of three buildings at Escalante Park will be razed to eliminate an outdoor courtyard, which has become a secluded meeting place for criminals using hypodermic needles. The

grab her?" Salvatore asks. "It's those types of thought processes that are now entering into the designer's arsenal of tools."

Salvatore has some of the same concerns as Steely when it comes to retail and convenience stores. "If you look at your typical convenience store of old, they had glass across the front so you could see the parking lot, and the other three sides of the building were blank," he says. "The person inside the building could never see what was going on behind or on either side of the building. Anyone could stand around lurking and waiting for the opportunity to commit a crime."

But all of that is changing. Smart retailers are putting in glass on the sides of their buildings, using television cameras, and installing "pay-at-the-pump" gas pumps to limit the number of people entering the store, especially at night.

"Many convenience stores lock up at night and transact business through a window, but they do it in a way that is not offensive," says Steely.

Salvatore adds that one of his clients