

CHAPTER 4. DESIGN AND HARDWARE

17. STATE OF THE ART. Concern for the physical aspects of residential security has traditionally centered on familiar types of protective hardware, e.g., locks, lighting, and window grilles. In recent years, growing attention has been given to new technologies for electronic alarm and surveillance systems. In addition, the enhancement of security through architectural design has become the subject of research and development. All of these trends represent significant advances in the state of the art, and even greater advances are probable for the future. However, the burgeoning development of new products and techniques confronts Management with a bewildering array of design and hardware options. This discussion is intended as a brief overview of these complex options, so as to provide guidance on choices incident to the planning approach described in Chapter 3.

18. DESIGN AND HARDWARE WITHIN THE CONTEXT OF A COMPREHENSIVE SECURITY PROGRAM. Design and hardware measures are among the most important components of residential security. Some degree of physical protection is always essential, even in the small project with relatively minor security problems. However, design and hardware are not panaceas. To achieve maximum effectiveness, economy and resident satisfaction, they must be integral to a comprehensive security program which also takes maximum advantage of "software" measures. In this context, the following preliminary considerations are applicable to planning design and hardware improvements:
 - a. Potential for Different Types of Security Objectives. Security-related design and hardware measures offer an enormous variety of options for all three types of security actions described in Chapter 2, subparagraph 5c above (i.e., "Check", "Treat" and "Cure" actions). Since this Handbook emphasizes "Check" actions, aimed at direct defense against crime and vandalism, most of this Chapter is devoted to design and hardware measures whose potential is primarily of that type. However, some of those measures, as well as more sophisticated design and hardware measures, have great potential as "Treat" and "Cure" actions. See paragraph 19 below.

 - b. Phased Planning and Action. Decisions on design and hardware, like those on other elements of the project's security program, should largely be made only after the goals and priorities of the total security program are set. See Chapter 3, subparagraph 12d and paragraph 14 above. Since additions or alterations to existing projects are apt to be expensive, and once made, even more expensive to change, great caution should be exercised in implementing them on a short-term basis. Normally, the relatively simple types of protective hardware are most appropriate to short-term

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action in existing projects, while basic changes in the design of buildings and grounds or installation of electronic surveillance and alarm systems require thorough advance planning. As accomplishment of "Check" prerequisites permits the security program to proceed on to "Treat" and "Cure" objectives, orderly progression can be made toward more sophisticated design measures.

19. ARCHITECTURAL DESIGN. Although full exposition of sophisticated concepts of the relationship between security and architectural design is a complex subject which is beyond the scope of this Handbook, some further mention of this subject is merited before turning to discussion of the more familiar types of design and hardware features for residential security. While recent research in this field has produced much of practical value, it has by no means arrived at a fixed set of design standards, and Management should therefore realize that this is a changing, though highly pertinent, technical field. A useful introduction to one major concept is provided by a publication entitled Architectural Design for Crime Prevention (1973), National Institute of Law Enforcement and Criminal Justice, Law Enforcement Assistance Agency (LEAA), U. S. Department of Justice (Government Printing Office, Washington, D. C. 20402, Stock No. 2700-00161, Price: \$2.60). That publication describes the "defensible space" hypotheses developed by Professor Oscar Newman of New York University. This concept includes the following four ingredients of physical design (as quoted from Chapter 1, paragraph B (page 2) of the referenced publication) which, independently and in concert, can contribute to residential security:

- a. Territoriality. Design ingredients "which serve to define spheres of territorial influence by dividing the residential environment into subzones within which occupants can easily adopt proprietary attitudes."
- b. Surveillance. Design ingredients "which improve the natural capability of residents and their agents to visually survey the exterior and interior public areas of their residential environment."
- c. Common Facilities. Design ingredients "which enhance the safety of adjoining areas through the strategic geographic location of intensively used communal facilities."
- d. Perceptions of the Project. Design ingredients "which through judicious use of building materials, the tools of architectural composition and site planning are able to reduce the perception

of peculiarity--the vulnerability, isolation of housing projects and their residents."

20. ANALYZING SPECIFIC DESIGN AND HARDWARE OPTIONS. Since there is virtually no specific type of security measure which is necessarily appropriate for every multifamily housing project, design and hardware must be analyzed in terms of choice among a multitude of options, always taking into account the possibility that a "software" alternative might be even better, and the fact that the effectiveness of design and hardware measures may depend upon ancillary "software" measures, e.g. surveillance, reporting, and police response. A useful method of analysis is to look at the project on an area-by-area basis. This permits evaluation of specific options in the context of their function. Paragraphs 21 through 23 below follow this method, providing a checklist of major design and hardware options which tend to be in the nature of direct protective measures designed to withstand criminal attack (or by evidence of their strength to dissuade the would-be offender from attempting attack), rather than to affect deeper levels of human motivation. Thus, these tend to be "Check" actions.

21. PROTECTING THE INDIVIDUAL DWELLING UNIT. Normally, the first priority for security in multifamily housing is the protection of the individual dwelling unit against burglary. The focus here is on doors and windows, although the existence of other portals (e.g., skylights and attic openings) calls for similar attention to those additional points of vulnerability. In any event, doors, windows, and other means of possible access should be analyzed as total systems, comprised of their frames, locks, and other accessories, as well as their basic components.

a. Exterior Doors. All exterior doors (including the back door, if any) should be sufficiently secure to withstand the degree of attack anticipated.

(1) The basic door component should be of sufficiently heavy construction to withstand the degree of force anticipated. Where security problems are serious, doors with glass panels should be avoided. It is strongly recommended that all exterior wooden doors be of solid-core construction with a minimum thickness of 1-3/4 inches. Both hollow wood doors and thin panel doors are inadequate where serious security problems exist. Although flush doors provide better security, if panel doors are desired, their panels should have a minimum thickness of 1/2 inch. Heavier-duty options are doors with solid wood cores and metal coverings and doors of hollow steel or aluminum construction.

- (2) Door hinges must also be of heavy-duty construction, and mounted on the inside of the door so that burglars cannot remove the entire door from its hinges. Spring hinges, which close the door automatically, are recommended.
- (3) Door locks are the one element in the entire security picture about which a standard recommendation can most validly be made for every multifamily housing project: Every exterior dwelling unit door should be equipped with a deadbolt mortise lock with a "throw" of at least one inch, constructed of case-hardened steel, brass, zinc alloy, or bronze. This, if no other, security design feature should be incorporated into every new and existing project. Locks equipped with spring latches only (but not deadbolts) are unsatisfactory, because an intruder can easily push back a spring latch with a celluloid strip. "Key-in-the-knob" locks should not be relied upon for primary exterior lock protection, since a determined burglar can break them with relative ease. The cylinder is a critical element of any lock and must be sufficient to withstand expert lock-picking efforts; it is desirable for a lock cylinder to have at least six pins. Protruding cylinders should be avoided, or protected by a spinner ring, a bevelled ring cylinder guard or escutcheon plate. There is, however, no such thing as a "burglar-proof" lock, which can withstand the attack of a skilled burglar with ample time and equipment to practice his skills. The value of a good lock is that it can withstand attack by the relatively unskilled burglar, or delay the skilled burglar until he is driven away or apprehended, or deter either from attempting to break in.
- (4) The door frame is often overlooked as a component of the security of a complete door system. All frames should be of heavy-duty construction. Metal-covered wood frames provide optimum cost effectiveness when used in combination with doors of similar construction, but are recommended for use with wooden doors as well. Wooden frames should be at least two inches thick. If hollow steel frames are used, the air space behind the frame should be filled with crush-resistant material, especially in the area of the strike. For in-swinging doors, rabbeted jambs should be used to prevent tampering in the area of the strike; addition of an L-shaped metal plate in the area of the strike affords extra protection to the lock. For doors opening out, an escutcheon plate, extending beyond the edge of the door and fitting flush with the jamb when the door is closed, will provide similar protection to the

lock. All plates mounted on the outsides of doors should be attached with tamper-resistant connectors, such as round-headed carriage bolts or one-way screws.

- (5) Interviewers are devices installed on opaque doors to allow persons inside the unit to see and hear who is outside without having to unsecure the door. A wide-angle optical interviewer (peep-hole) should be installed on each exterior door (including the back door, if any). This is a relatively inexpensive measure and should be standard for all multifamily housing projects. The opening of an optical interviewer should be no more than 1/4 inch in diameter, and a double glass should be used for safety. Slide-chain interviewers (chain locks) should not be relied upon; they are easily defeated and impart a false sense of security.
- (6) Doors with glass panels, though highly undesirable for exterior use where security problems are serious, must be given special attention wherever they are used. Sliding doors should have break-resistant glass and should be equipped with a sturdy lock designed specifically for this type of door. For other types of doors with glass panels (e.g., French doors), the deadbolt mortise lock should be key-operated from the inside as well as the outside, in order to prevent the burglar from simply removing a portion of the glass and reaching inside to operate the latch by hand.

b. Windows. The dwelling unit windows which are most vulnerable to attack are those situated on the first floor (or otherwise accessible from the ground) and those leading to fire escapes. Also vulnerable, but to lesser degree, are windows located over a canopy (e.g., above a lobby entrance), adjacent stairwell windows or on the top floor. Cornices, ledges or other architectural features can create further vulnerability. In some instances, the threat of determined and resourceful burglars has even extended several stories above the ground or below the roof. Since windows are a prime target for vandalism, that threat, as well as the threat of burglary, should be considered in planning measures for the protection of windows. Careful analysis of experience, trends and building design will enable Management to identify degrees of window vulnerability.

- (1) Window glass can be protected by the use of "unbreakable glass" made of polycarbonate materials, though at relatively high initial purchase cost. Other options which are

superior to ordinary window glass include plate glass, tempered glass, and bonded safety glass.

- (2) Window locks are an important element to which little thought is usually given. The only reliable window locks are those of the key-operated variety. However, such locks present problems of fire safety and inconvenience to residents. The standard crescent sash lock, the slide bolt latch, and various friction or pressure devices can easily be overcome, especially if the intruder is willing to break a small section of the glass.
- (3) Grilles, bars, and gates afford reliable protection for vulnerable windows where security problems are great. Such fixtures should be of heavy-duty construction, and should be securely attached to the window frame with machine or roundheaded bolts which cannot be easily removed from the outside. Fire safety requirements must be checked before window grilles, bars, or gates are installed.

c. Electronic Alarm Systems. The measures described in subparagraphs 21a and 21b above for the protection of exterior doors, windows, and other possible points of access to the dwelling unit can be reinforced by electronic alarm systems, although such systems should be used only where necessary and practicable.

- (1) Types of Alarm Systems. There are scores of electronic alarm products on the market, varying greatly in price, quality, and complexity. Some are very difficult to install; others need only be plugged into an existing electric outlet. Alarm devices fall roughly into two categories: contact devices and motion detection devices. In the simplest terms, contact devices are mechanical switches which detect the movement of a door or window. Foil strips are a related mechanism used to detect breakage of glass in windows and doors. The second type of alarm system detects the motion of an intruder as he moves about the protected space. Motion detection technologies include seismographic devices, photo-electric cells, and ultrasonic detectors. Great caution should be exercised in selecting alarm equipment. The advice of an independent expert is strongly advised.
- (2) Alarm Reporting Systems. Either a contact or motion detection system may be linked to a local alarm (bell, buzzer, lights on the immediate premises) or to a central alarm (via wires to a security force which is prepared to

react when so alerted). Local alarms aim at driving off the burglar or aiding in his apprehension, and at alerting residents and neighbors that a break-in is being attempted. The effectiveness of any alarm system

depends to a great extent upon the ability to secure a prompt response from the police or other security personnel. False alarms are a major problem, because they diminish the credibility of the system and tend to slow or stop effective response from police, security personnel, and neighbors.

22. PROTECTING COMMON AREAS WITHIN MULTIFAMILY BUILDINGS. With regard to protection of common areas within multifamily buildings, a basic choice is the degree to which a "fortress" strategy can and should be adopted. For a project inhabited by families with children, such a strategy may be patently inconsistent with the normal pattern of residents, daily lives. An extreme "fortress" strategy is apt to be most workable in a high-rise building exclusively for the elderly. Acceptability to residents is always a commanding consideration, though it may be possible to obtain resident acceptance through careful educational efforts.

a. Lobbies are a first line of building defense. The degree and methods of controlling access must depend upon residents' attitudes and life styles and the availability of policing services. Nevertheless, in all instances, the lobby itself and the area immediately outside its doors should be brightly lighted and free of places of concealment. The following additional elements of lobby design merit special attention:

- (1) Lobby doors should have large glass panels, to facilitate two-way surveillance. Where security problems are great and policing services inadequate to control access, serious consideration must be given to keeping lobby doors locked, especially during evening hours. Where this is done, lobby doors should be equipped with heavy-duty metal frames, a good deadbolt mortise lock set, and a sturdy door closer.
- (2) Intercom (annunciator) devices permit residents conveniently to admit callers when lobby doors are locked. The familiar "buzzer reply" system is satisfactory, but should be installed during initial construction, because costs of wiring installation are very high in existing buildings. A functionally similar alternative is an intercom system utilizing regular telephone wires, instead of separate wiring, so that installation costs are relatively modest. However, a monthly service charge is made for each dwelling unit. If there is a telephone connection in the unit, this

system can be used even if the resident does not have a regular telephone. This type of system is available through some local telephone companies. A much less expensive, though also much less satisfactory, method is

simply to have the telephone company install a public telephone outside the lobby entrance, so that callers can telephone residents, who can then come to the lobby to open the door. One potential problem with any of these systems is vandalization of intercom panels or telephones located outside the building's entrance. Difficulties with resident acceptance and vandalism tend to be greatest in buildings with many small children in residence.

- b. Secondary doors (e.g., emergency exits, delivery doors) each require analysis in terms of ordinary function as well as threat of criminal access. It is sometimes difficult to reconcile these two factors. Fire regulations require that occupants of the building be readily able to open emergency doors from the inside; the best solution here is a vertical-bolt latch or crash bar on the inside, keeping the door locked from the outside at all times. Exit alarms can be installed to alert security personnel upon the opening of emergency doors. All secondary doors should have automatic door closer devices. Glass panels should never be used in such doors, and the construction of the door and its frame should be sufficiently heavy to withstand the degree of attack anticipated. Where secondary doors are continuously used for resident ingress and egress (e.g., doors to garages or parking lots), they should be treated in much the same way as lobby doors.
- c. Garage access should be controlled, even if doors leading from the garage to other areas of the building are monitored and/or kept locked.
- d. Elevators are among the most problematical elements of high-rise multifamily buildings, from the standpoint of vandalism as well as crimes against persons.
 - (1) Surveillance is a prime factor in elevator security. Buildings should be designed so that the elevator area is fully visible throughout the lobby, and preferably from the area immediately outside the lobby and the street beyond. On levels other than the lobby floor, elevators should open directly on hallways, without recesses or blind corners to restrict two-way visibility. A common and inexpensive device to increase a person's ability to survey the interior of an elevator before entry is a

convex mirror placed in the upper back corner of the elevator cab.

- (2) Audio-intercom systems permit persons within the elevator to communicate with persons in elevator waiting areas or with

security personnel. A continuous audio device is preferable to one which must be activated by pushing a button.

- (3) Closed-circuit television is particularly adaptable to elevator security (see paragraph 24 below).
- (4) Vandalism to elevators can be limited by a variety of measures, including use of stainless steel mushroom buttons, protecting indicator lights with a heavy-duty plastic shield and use of automatic sliding doors (rather than swinging doors). Door glass, though an element in surveillance, is so susceptible to breakage as to merit avoidance where vandalism is a problem. Where existing elevators have such glass, a piece of metal can be simply welded or bolted over the opening.

e. Mailboxes and mail rooms should be located so as to permit maximum surveillance --preferably in or adjacent to the main lobby of the building. The mailboxes themselves should be constructed of heavy metal, with tightly-fitted doors. Locks should be of the cylinder type with at least five pins. Sizes of mailbox doors should be kept at a minimum. A locked mailbox room provides additional security, although it should be subject to full surveillance from the lobby by means of large windows and good lighting. Where back-loading mailboxes are used, a separate mail loading room is often provided. Doors to all such rooms should be of sturdy construction, should be kept locked on a 24-hour basis, and should be equipped with automatic door closers.

f. Laundry rooms commonly invite attack on residents or pilferage of coins from laundry machines. A first consideration here is location. Laundry rooms are usually located in basement recesses, and Management should carefully consider whether that is the best choice. If acceptable to residents, the laundry room might better be situated in a more active area of the building, adjacent to social rooms or even the main lobby, and fitted with large glass windows to facilitate surveillance. This may accord well with social patterns, and there is no reason why laundry rooms cannot be made attractive. In any event, laundry rooms should be kept locked on a 24-hour basis, with tenants being provided Keys. Laundry rooms may be further protected by audio intercom or closed-circuit television devices.

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- g. Social rooms should provide protection for both people and such valuables as may be kept there. Proximity to other heavily-used areas (e.g., the main lobby) can facilitate mutual surveillance by residents in the ordinary course of their activities.
- h. Storage rooms for residents' and Management's property, merit heavy protective measures. Use of windowless rooms (e.g., in

basements) is advisable, and door systems (including their locks and frames) should be of particularly strong construction. Deadbolt locks should always be used. For residents' storage, the additional use of locked bins is recommended.

- i. Management offices should be protected to the degree they make attractive targets for burglary or robbery, with particularly strong measures where money, office equipment, or other valuable movables are kept in such areas. Measures similar to those employed for dwelling units are recommended (see paragraph 21 above). Where significant sums in money or checks are kept in the Management office, a strong safe (preferably bolted into the floor) should be used. Collection windows may be further protected by heavy metal grilles or bars and alarms which can be readily activated in the event of robbery. However, one of the best precautions is to avoid keeping large sums in cash or checks on the premises at any time.
- j. Hallways and stairs should be susceptible of easy surveillance. Open design is generally desirable, and all such areas should be well-lighted at all times. As in the case of elevators, convex mirrors can be used to permit an approaching view of possible places of concealment. Doors between fire stairwells and other common areas should be kept locked from the outside, with hardware to permit emergency egress only. Vertical-bolt latches or crash bars on the inside of such doors and automatic door closers are recommended. Exit alarms provide a local alert upon the opening of a fire exit door, but have the same weakness as all local alarms -- the necessity for prompt response and the problem of nuisance and credibility.
- k. Roofs merit attention, because of their potential as avenues of escape or access and as isolated areas which may be used for such offenses as drug abuse, assault, and rape. In addition, easy access to the roof presents a safety hazard to children. At the same time, fire safety requirements may demand that access to the roof be available from fire stairs. Where this is the case, doors to the roof should nevertheless be kept locked from the outside, with vertical-bolt latches or crash bar on the inside to permit emergency egress. However, if fire

safety codes permit, such doors should also be kept locked from the inside. In either event, but especially where ready egress must be allowed, consideration should be given to installing exit alarms on these doors, and means for regular surveillance of roof areas. Rooftop lighting, closed circuit television, and (to the extent possible) avoidance of structural elements which provide opportunities for

concealment on the roof are possible options to promote surveillance.

1. Interior lighting for common areas within the building has already been mentioned in connection with several of the specific types of areas discussed above. However, the generally applicable principle merits additional emphasis: all common interior areas should be brightly lighted at all evening hours when they are subject to ordinary use. For lobbies, elevators, hallways, and stairwells, this means 24-hour lighting. Where vandalism is a problem (as is most likely in lobbies, elevators, hallways, and stairwells), vandal-resistant lighting fixtures should be installed. Residents should be requested to make prompt report of inoperative lights, and maintenance staff should be required to make frequent lighting inspections and speedy repairs or replacements. Good lighting for interior common areas is one of the least expensive of security measures, and missing or burned-out bulbs are always a mark of poor management. (Energy conservation measures may impose constraints on lighting.)

23. PROTECTING EXTERIOR AREAS OF THE PROJECT. Normally, at least in housing for families with children, it is infeasible or undesirable to restrict access to the project's grounds to the same degree as with respect to interior common areas. On the other hand, in some instances (e.g., all-elderly projects), it may be both feasible and desirable to extend some degree of a "fortress" strategy to the exterior boundaries of the property. Again, the choice must depend upon a realistic appraisal of all the relevant facts. The following options merit consideration in this connection:

- a. Exterior lighting should be amply provided for all heavily-used areas, such as walkways, entry areas, and parking lots. Lighting levels in projects for the elderly should be well in excess of conventional standards, because light perception declines with advancing age. High placement of lighting fixtures results in wider coverage as well as less susceptibility to vandalism. High intensity lights are well-suited to large areas, such as parking lots. A variety of vandal-resistant lighting equipment is now being marketed. The assistance of lighting engineers or consultants is recommended. (Energy conservation measures may impose constraints on lighting.)

- b. Recreational areas for children and adults merit individualized treatment, taking account of the particular use to be made of each, the particular group of users, and the social patterns of the project and the wider neighborhood. Generally, areas designed for use by different age groups (preschool, elementary school,

teenagers, adults) should be sufficiently separated by space or other barriers to minimize conflicts. However, all recreational areas should be susceptible to intensive surveillance from streets and sidewalks, and, if possible, from the windows of dwellings. In addition, benches on the perimeter of playgrounds and areas for athletics can encourage adults to exercise casual surveillance. While vandalism to playground equipment is a matter of legitimate concern, hard use of such equipment should be no cause for discomfort. Particularly, where their number is high, children "use up" playground equipment during the ordinary course of play, and this is even desirable as a means of diverting normal youthful energies from damage to other elements of the property.

- c. Fences and walls may be utilized to channel or restrain movement, so as to facilitate surveillance and policing. However, it is seldom feasible to erect complete physical barriers around the property. More widely appropriate is the creation of limited exterior zones for use by elderly residents or small children, with access only by way of an adjacent building. Fences and walls may be objectionable to residents. However, if they are well-designed in both their security and esthetic aspects, it is much easier to gain resident acceptability.
- d. Approaches to building entrances are particularly prone to crime, and primary entrances should be near the street. Routes from parking lots to building entrances should also be kept short and direct. Dense shrubbery or other possible places of concealment should be avoided in these areas. Every opportunity for casual surveillance should be exploited.
- e. Closed-circuit television can provide effective surveillance of exterior areas. (See paragraph 24 below.)

24. CLOSED-CIRCUIT TELEVISION SURVEILLANCE SYSTEMS. Where other means of surveillance are inadequate, the potential and feasibility of closed-circuit television (CCTV) systems should be explored. While initially costly, CCTV may be more economical than such alternatives as design modifications or security patrols, particularly in large projects. However, Management should exercise great care in deciding whether CCTV is suitable, workable, and cost-effective for the particular project. The following points are pertinent in this connection:

- a. CCTV equipment of great variety in quality and cost is now on the market, and choice of equipment as well as the manner of its use should be carefully studied. Expert independent advice is essential before any purchase is made. All equipment should meet

the standards of the Electronic Industries Association for CCTV.

b. Monitoring and response components are critical to the effectiveness of CCTV systems. Accordingly, a well-planned, well-trained and well-supervised personnel adjunct is essential. Regular police or project security personnel, or both, might be relied upon for dispatch to the scene of an offense, but there should always be a Management intermediary to monitor the system on a continuous basis and obtain prompt dispatch.

c. Repairs of CCTV equipment must be given emergency priority. Breakdowns do worse than producing lapses in surveillance. They can also create a false sense of security or undermine the credibility of the system.

d. Camera locations should concentrate on particularly vulnerable areas within buildings and grounds. Lobbies and elevators are prime locations. Remote pan and tilt mechanisms enable one camera to scan a large area. Protection against vandalism is an important consideration.

e. Available lighting virtually dictates the type, and therefore the cost, of the camera needed to produce an image of adequate quality, and the cost of additional lighting must be balanced against the higher cost of more light-sensitive cameras.

f. In-apartment monitoring by residents, by means of their own television sets, is possible by connecting CCTV equipment to a master antenna system within a building. Residents can be given the option of tuning into unused television channels to monitor the lobby, elevator, playground, and parking lot. While this does not assure continuous monitoring, in large buildings it can provide considerable back-up to the Management monitor. A microphone system can be added, permitting communication between the apartment and children at the playground or callers at the lobby entrance. The residents' organization might organize a voluntary monitoring program, with certain residents taking responsibilities for watching the CCTV image in their homes during specific hours.

g. Widespread knowledge of how a CCTV system operates is desirable, provided the system is genuinely effective. If the potential offender knows of such features as in-apartment monitoring, the

deterrent effect will be strengthened. Therefore, Management should make every effort to brief residents and community groups on the system, and encourage people to spread the information as widely as possible. Notices posted outside buildings and in the lobby may help to get the message across.

25. MAINTENANCE. Strong physical security depends to an important

degree upon good maintenance. Management's maintenance staff must be thoroughly trained in maintenance of security hardware and equipment, and repairs must be effected promptly. Continuous serviceability of all security hardware and design elements is essential to build and maintain resident confidence, to enhance their subjective sense of security, to prevent a false sense of security and, of course, to present a credible deterrent to would-be offenders. Both residents and maintenance staff must be instructed to report maintenance needs in both common areas and individual units. Regular maintenance inspections should cover all security features. Even with respect to special equipment beyond the repair capabilities of regular maintenance personnel (e.g., electronic alarm or CCTV equipment), such personnel should be trained to identify and report deficiencies.