

DESIGNING SECURITY WITH THE ARCHITECTS

Crime prevention and security officers throughout the country today are working with various architects for the sole purpose of improving the state of security within the community. Crime is not always predictable, because it is the work of human scheming. In our efforts to combat this threat, it is essential that we all attempt to reduce the opportunity so often given to the criminal to commit crime. Every building, large or small, creates a potential crime risk and planners and architects owe it to their clients to devise and implement effective security measures.

The subject of designing security with architects is another way of conducting a security survey, but in this case, it is before construction. It extends far beyond the protection of doors and windows. It even deals with the quality of one vendor's products versus another of a lesser quality. The following checklist is for use as an initial guide to assist you with the architects to obtain better security.

Anticipation of Crime Risk Checklist

1. As with any security survey, your first step is to consult with the occupants of the complex.
2. Identify areas that will house items of a sensitive nature or items of value, like safes or audiovisual equipment.
3. Identify the main crime targets.
4. Assess the level of protection required.
5. Examine the facilities that the company currently occupies. From that survey, the building characteristics and personality can tell you how the structure has been used or abused.
6. Is cash being handled within the building that has to get to a bank?
7. Is there a concentration or even distribution of valuables within the complex? Decide on the area most vulnerable to criminal attack and make your recommendation to harden that target.
8. Reduce entrances to a minimum, thereby reducing movement of staff and visitors.
9. What crime risk is in the area?
10. What is the level of police patrol and police activity in the area?
11. What are the distances from the complex to the local police and fire stations?
12. Have the materials being used met state and national standards?
13. Who cleans and secures the complex day and night? Are these people dependable, intelligent, and reliable?
14. Make note of employee behavior.

Designing Security and Layout of Site

Designing security into a new complex should begin with interior security. Work your way to the exterior and then to the outer perimeter. Keep in mind these six points before you sit down with the architects:

1. Elimination of all but essential doors and windows
2. Specification of fire-resistant material throughout the interior

3. Installation of fire, intrusion, and environmental control systems
4. Separation of shipping and receiving areas
5. Provisions for the handicapped
6. Adequate lighting around the perimeter, before, after, and during construction.

Building Site Security and Contractors

It is safe to say that all contractors experience a theft of stocks or material before completion of the site. They should be made aware of this and be security conscious at the beginning of construction, before theft gets costly. Thefts that appear to be of an internal nature should be analyzed in relation to previous such thefts at other sites.

Site Security Checklist

1. The contractor should appoint security officers or a liaison staff person to work with police on matters of theft and vandalism.
2. Perimeter protection:
 - a. Gate strength
 - b. Hinges
 - c. Locks and chains
 - d. Lighting
 - e. Crime rate in the neighborhood
 - f. Construct a 10- or 12-foot fence topped with three rows of barbwire.
3. Location of contractor's building on site:
 - a. Inspect security of this building.
 - b. Review their security procedures and controls.
 - c. Light building inside and out.
4. No employees should be permitted to park private cars on site.
5. Materials and tools on site should be protected in a secured yard area.
6. Facilities for storage and security of worker's tools and clothes should be kept in a locked area.
7. The subcontractor is responsible to the main contractor.
8. Security officers should patrol at night and on weekends.
9. Use a temporary alarm protection for the site.
10. Payment or wages to employees should be with checks.
11. Deliveries of valuable material to site and the storage of such items should be placed in a secured area.
12. Establish a method to check fraudulent deliveries using authorized persons only.
13. Check for proper posting of signs around the perimeter.

14. Identify transportable material and property.

Operation Identification should be available.

15. Method used to report theft:

- a. Local police b. Office
- c. Insurance company d. Security company

If guards are needed to protect the site, determine:

- 1. Hours of coverage
- 2. Whether guards answer to the general contractor or the owner of the complex (they should answer to the general contractor)
- 3. Whether they are employed by the general contractor or a contract guard company
- 4. Their police powers
- 5. How they are supervised
- 6. What type of special training they receive
- 7. Whether local police have been advised of their presence on the site
- 8. The uniform of the guard on duty, flash-light (size), firearms, night sticks, or chemical agents
- 9. How promotions in the guard company are obtained
- 10. What keys to the complex the guard has
- 11. What the guard's exact duties are; whether guard has a fixed post or a roving patrol
- 12. Review the guard's patrol
- 13. Whether guards carry a time clock
- 14. Whether they write a report on each shift
- 15. Who reviews these reports
- 16. Whether each guard has sufficient responsibilities and is active during tour of duty
- 17. Whether the guard has an up-to-date list of who to call in case of emergency

Building Design: Interior Checklist

- 1. Locate the payroll office
- 2. Examine security as it pertains to cash and the storage of cash overnight
- 3. Be familiar with cars parking within the complex
- 4. Employ staff supervision of entryways
- 5. Avoid complex corridor systems

6. Visitors:
 - a. Are they restricted as to how far they can maneuver?
 - b. Are there special elevators?
 - c. Is there limited access?
7. Determine the provisions and placement of the reception desk
8. Determine where vulnerable equipment and stock are housed
9. Custodial quarters:
 - a. Where are they housed?
 - b. Is there a phone?
 - c. What other security devices are installed?
 - d. Can this area be secured when the staff leaves at night?
10. Proper security of staff quarters
11. Industrial plants designed and laid out to combat internal vandalism
12. Electric, water, and gas meters should be built into the outside wall for service access
13. Department stores and other buildings accessible to public use, in addition to shape and layout, designed with deterrents to prevent crime:
 - a. Access for handicapped and disabled persons—guard rails, telephones, toilets
 - b. Provisions for one-way mirrors throughout the store
 - c. Closed circuit television—Who monitors it?

Is it hooked up to the alarm system with a recorder?

 - d. Beeper or signal system
 - e. Zoned intrusion alarm panel on street floor for quick police response
 - f. Zoned fire alarm panel on street floor for quick fire department response
 - g. Lighting 24 hours a day
 - h. Display area vulnerable
 - i. Freight elevator access to the street
14. Apartments:
 - a. Avoid overdensity
 - b. Avoid neurosis, fire hazards, and floods
 - c. Plan on reduction of vandalism
 - d. Trash chutes and storage areas kept clear
 - e. Basement access reduced
 - f. Security in tenants' storage area
 - g. Key security implemented
 - h. Foyer also locked
 - i. Vandal-proof mailboxes

- j. Who occupies complex—Upper, middle, or lower class people? All white, all nonwhite, or mixed families? Combination of classes and races? Senior citizens?

Building Design: Exterior Access Checklist

1. External doors:
 - a. Choice of final exit door
 - b. Design style and strength of door and frame
 - c. Choice and strength of panels: glass and wood
 - d. Ensure hinges cannot be removed from the outside
 - e. Minimum number of entrances
 - f. Secure fire doors
 - g. Make tools and ladders accessible (garage doors)
 - h. Provide lights over entrances
 - i. Choice of locks and hardware
 - j. Use only steel doors and frames
 - k. Eliminate exterior hardware on egress doors wherever possible
2. Building line:
 - a. Lines of vision
 - b. Hidden entrances
3. Architectural defects affecting security
4. Roof:
 - a. Access
 - b. Skylights
 - c. Pitch angle
5. External pipes—flush or concealed?
6. Podium blocks—access to upper windows
7. Basement:
 - a. Access points inside and out
 - b. Storage areas
 - c. Lighting
 - d. Fuel storage areas
 - e. Number of entries to basement, stairs, and elevators
 - f. Grills on windows
8. False ceilings—access to and through
9. Service entrances:

- a. Service hatches
- b. Ventilation ducts c. Air vent openings d. Service elevators
- e. Grills on all ducts, vents, and openings over 12 inches

Building Access: Windows and Glass

The purpose of the window, aside from aesthetics, is to let in sunlight, allow visibility, and provide ventilation. The following types of windows provide 100% ventilation: casement, pivoting, jalousie, awning, and hopper. The following provide 50–65% ventilation: double-hung and sliding.

Factors to consider in the selection of type and size of a window are

1. Requirements for light, ventilation, and view requirements
2. Material and desired finish—wood, metal, aluminum steel, stainless steel
3. Window hardware—durability, function
4. Type of glazing
5. Effectiveness of weather stripping
6. Appearance, unit size, and proportion
7. Method opening (hinge or slider), choice of line of hinges
8. Security lock fittings
9. Accessible louver windows
10. Ground floor—recommend lower windows, large fixed glazing and high windows, small openings
11. Size and shape to prevent access
12. Size because of cost due to vandalism
13. Use of bars or grilles on inside
14. Glass:
 - a. Double glazing deterrent b. Type of glass
 - c. Vision requirements d. Thickness
 - e. Secure fixing to frame
 - f. Laminated barrier glass—uses
 - g. Use of plastic against vandalism
 - h. Fixed, obscure glazing for dwelling house garages
 - i. Shutters, grilles, and louvers for sun control and visual barriers as well as security barrier

Ironmongery

The Lock and Its Installation

By definition, a lock is a mechanical, electrical, hydraulic, or electronic device designed to prevent entry to a building, room, container, or hiding place to prevent the removal of items without the consent of the owner. A lock temporarily fastens two separate objects together, such as a door to its frame or lid to a container. The objects are held together until the position of the internal structure of the lock is altered—for example, by a key—so that the objects are released.

1. Perimeter entrance gates:

- a. Design
- b. Locking devices and hardware
- c. Aesthetics

2. Door ironmongery:

- a. Theft-resistant locks—choice of manufacturer, design
- b. Electrically operated
- c. Access control
- d. Mortise security locks
- e. Sliding bolts
- f. Flush bolts
- g. Dead bolts
- h. Hinge bolts
- i. Nonremovable hinges on all outside doors
- j. Key control system
- k. Door viewers
- l. Safety chains
- m. Choice of panic bolts
- n. Fire doors
- o. Sliding doors
- p. Additional locks and padlocks
- q. Quality of locks used
- r. Sheet metal lining protection of door

3. Window ironmongery:

- a. Security window locks built-in during manufacture
- b. Security window locks fitted after manufacture
- c. Transom window locks
- d. Locking casement stays
- e. Remote-controlled flexible locks

4. Additional ironmongery:

- a. Hardware of the highest quality
- b. Control of keys
- c. High-grade steel hasps
- d. Strong lock for strong door or window needs strong frame

Our objective is prevention of the defeat of locks through force. When stress is applied to a door in the form of bodily force, pry bars, or jacks, something has to give. Every mechanical device has its fatigue and breaking points, although no one, to our knowledge, has properly defined this point for doors, locks, and frames in terms of pounds of pressure or force.

Doors

There are four types of door operation: swinging, by-pass sliding, surface sliding, and slide-hinged folding.

Physical door types are wood, metal, aluminum, flush, paneled, French, glass, sash, jalousie, louvered, shutter, screen, Dutch, hollow-core doors, solid-core doors, batten doors, pressed wood doors, hollow metal-framed doors, and revolving doors.

Garage and overhead doors can be constructed in a panel type, flush, or webbed.

Each of these doors needs a specific type of security hardware. I am not going to go into these specifics, but I want to mention some additional factors to consider in the selection of hardware:

1. Function and ease of door operation
2. Material, form, surface texture, finish, and color
3. Durability in terms of anticipated frequency of use and exposure to weather and climatic conditions. Finish aluminum and stainless steel are recommended in humid climates and where corrosive conditions exist (e.g., sea air).

Finish door hardware should include

1. Locks, latches, bolts, cylinders, and stop works, operating trim
2. Nonremovable hinges
3. Panic hardware installed in a manner which will prohibit their being removed or the pins being tampered with.

Rolling overhead doors not controlled or locked by electric power can be protected by slide bolts on the bottom bar. With crank-operated doors, the operating shaft should be secured. Chain-operated doors can be secured in a manner that allows a steel or cast iron keeper and pin to be attached to the hand chain.

Intrusion Alarm Systems Checklist

1. Quality of products being used—Are they listed in Underwriters' Laboratories?
2. Vulnerable materials in protected areas
3. Smallest area to be protected
4. Audible alarm termination type of horn
5. Instant or delayed audible warning
6. Silent alarms, connected to police or central station
7. Choice of detection equipment—motion, infrared magnetic contacts, or the like
8. Degree of protection—building perimeter, site perimeter, target protection, internal traps, overall construction
9. Sufficient alarm zones (plus extras) to fit the lifestyle of the complex
10. If a union contractor, then the alarm company must be a union company or obtain permission for a nonunion alarm vendor
11. Influence of environmental aspect in architects' selection of alarm components

12. Electric outlets for areas where power is needed

13. Methods of monitoring a supervised line

14. Service provider in the event of breakdown

the minimum lock requirements necessary for security, but various considerations are evident from the variety of provisions that currently exist. A deadbolt, or dead latch, or both is essential. The standard latch, which functions primarily to keep the door in a closed position, can easily be pushed back with such instruments as a credit card or thin metal objects.

The door should be of solid construction. If wood is used, the door should have a solid wood core. Doors should be installed so that hinges are located on the inside. If this is not possible, hinges should be

Closed Circuit Television (CCTV) Checklist

1. Quality of products to be used—analogue or digital
2. Type and style of lens and monitors used
3. Monitoring the monitors
4. Electric outlets at each camera location to determine
5. Service provider in the event of breakdown
6. Size of control room to determine the amount of controls and panel that can be monitored
7. Installation and repair system provider
8. Time lapse recorder and tape quality or digital recorder.

Card Access Control Checklist

1. Credit card size, private post office box number printed on it, so lost cards can be returned 2. Card type—magnetic, electric circuit continuity, magnetic stripe, passive electronic, IR optical, differential optics—and capacities.

3. Site location will determine:

- a. Number of entry control points
- b. Number of badges needed
- c. Rate at which persons must be passed through entry-control points
- d. The number of levels of access accommodated
- e. Procedures used to issue badges

4. Equipment:

- a. Tamper alarm to detect tampering with the electrical circuits
- b. Battery backup supply

- c. Capability to detect tampering with line circuits
- 5. Card access control over lifestyle of building
- 6. Applications, aside from security:
 - a. Controlled access to buildings and parking areas
 - b. Alarms c. CCTV
 - d. Watch guard tours e. Heating system
 - f. Smoke and fire detection
 - g. Temperature and humidity controls
 - h. Refrigeration and air conditioning controls i. Time and attendance
 - j. Elevator control
 - k. Gas pump control
 - l. Xerox copy control

Storage Rooms, Safes, and Vaults Checklist

Storage Rooms

- 1. Considerations:
 - a. Vulnerabilities b. Contents
 - c. Risk management principles d. Type of storage area
 - e. Period of complex occupancy
 - f. Underwriters' Laboratory listing
- 2. Placement—Can it be seen from outside?
- 3. Construction and type of material
- 4. Restrictions on open area around storage room
- 5. Installation factors in design stage
- 6. Intrusion protection
- 7. Fire protection
- 8. Ventilation of storage room
- 9. Water- and fireproofing
- 10. Emergency exit

Safes

1. Correct type of safe required for needs; money versus document type safe
2. Wheels removed and bolted down
3. Placement of safe—visibility
4. Weight factor and floor weight capacity
5. Security of safe to fabric of building
6. Provisions of area in concrete for installation of floor safe

Vaults

1. A U.S. Government Class 5 security vault door, which has been tested and approved by the government under Fed. Spec. AA-D-600B (GSA-FSS) and affords the following security protection, which applies only to the door and not to the vault proper:
 - a. 30 worker-minutes against surreptitious entry
 - b. 10 worker-minutes against forced entry
 - c. 20 worker-hours against lock manipulation
 - d. 20 worker-hours against radiology techniques
2. Door options:
 - a. Right- or left-hand door swing
 - b. Hand or key change combination lock
 - c. Optical device
 - d. Time-delay lock
3. Weight of vault versus floor strength
4. Wall thickness
5. That which is protected determines the degree of protection

Exterior Lighting Checklist

1. Lighting adequate to illuminate critical areas
(alleys, fire escapes, ground-level windows)
2. Foot-candles on horizontal at ground level (a minimum of 5 foot-candles)
3. Sufficient illumination over entrances
4. Perimeter areas lighted to assist police surveillance of the area
5. Protective lighting system and the working lighting system on the same line
6. Auxiliary system designed to go into operation automatically when needed
7. Auxiliary power source for protective lighting

8. Frequency of auxiliary system tested
9. Protective lights controlled by automatic timer or photocells or manually operated
10. Hour this lighting is used
11. Switch box(es) and automatic timer secured
12. Ease of compromising protective lights (e.g., unscrewing of bulbs)
13. Type of lights installed around the property
14. Cost-effectiveness
15. Vandal-proofing of fixtures
16. Glare factor
17. Even distribution of light
18. Lights mounted on the building versus pole fixtures

Crime Prevention Awareness Points

1. Has the general contractor made arrangements to secure the perimeter and provide adequate lighting of the complex before starting work?
2. Has the general contractor been advised to secure equipment and work area from internal theft and so advise all subcontractors? Be sure to inspect the area and make immediate recommendations.
3. How good is entrance gate security?
4. Can vehicles park close to the construction site?
5. Is the building too close to adjoining property?
6. Is the site subject to vandalism or attack before completion?
7. Will cars be parking around the complex after completion?
8. Could landscape coverage pose a crime risk?
9. Are external lights on the building or on the grounds?
10. What security is given to main utilities, transformers, and the like, preferably underground?
11. Are temporary construction locks installed throughout the building during the construction process and later replaced with the permanent hardware after all exterior and interior work has been completed and the site is ready for occupancy?
12. Times when site is most vulnerable, between the time construction has ended and when the new occupants have completely moved in, there tends to be confusion. Are movers and decorators allowed uncontrolled access to the site? While something can be carried in, something else can be carried out. Identification badges should be used during this period.
13. Do the size of the complex and the amount of occupancy give you an idea of the complex's potential crime rate?
14. Does the period our society is going through have an effect on the conditions the architects are working under in planning a building for construction.

