



## USING LANDSCAPING TO FURTHER SECURITY

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Each industry has its trends and "buzzwords." Security is no different. Just a few years ago, everyone in our industry began to talk about "security design." The security manager was suddenly expected to become involved in advising architects and "owners" (the word used by architects to refer to your company's top management) on how buildings should be designed so that security can be assured. This trend was more than just a passing fad. With the involvement of security managers in security design, architects and building owners recognized that security directors had something unique to offer to the planning process.

Security directors had finally "matured" as a group to win recognition by other professionals. This was a major step forward for the security profession and for us as individual professionals. Unlike past years when the security manager was merely a chief guard, designated as being "in charge" solely due to his/her seniority, our superiors recognize our accomplishments and technical knowledge, and call upon us to serve in a more important advisory role. A major landmark has been achieved by our profession.



Today, we as security professionals are called upon to play an important role in other technical areas as well. One of those emerging areas is "landscape architecture." Why landscape architecture? The involvement of security managers in fields like computer security is obvious and logical, but what is there to landscape architecture that requires our involvement? Why is this such a hot topic? What influences an industry and causes trends like this to develop?

Over the past several years, building owners--the people we work for-- have found themselves involved, more and more, in litigation, which has resulted from a foreseeable or allegedly foreseeable crime against visitors on their property. Someone enters the grounds of a building, is attacked, robbed or raped, and the owner, architect, and security manager are threatened with a lawsuit. As the trend develops to hold companies responsible for foreseeing crime on

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their property, who else is more qualified at the task of evaluating the security of an area than the security professional responsible for protecting that area?

So, we find that not only are companies dressing up their exteriors with landscaping, at the same time, courts are holding owners responsible for foreseeing crime on their grounds and taking steps to prevent it. More important, when landscaping creates conditions which contribute to the loss of security on a site, the potential for monetary loss in a suit can be great.

There is another trend that affects us as well. Technology has made it possible for us to analyze landscaping and other construction details on a specific site, and to determine the effects of bomb blasts and other similar events through the use of computer-aided analysis. Security technology breakthroughs are not uncommon. At a time when the threat of crime and terrorism is great, technology that helps analyze landscaping, building design, and composition with the goal of preventing bomb blast damage or other dangers by criminals is quite welcome.

Today, security directors and managers are being consulted more often on interior and exterior security design. This means that we must know about landscaping as it relates to security if we are to fulfill expectations of our superiors who call upon us for advice.

For the purpose of this

presentation, landscape architecture deals with the design of a building's grounds for the purpose of aesthetics, preservation, restoration, or other goals defined by the owner. When an owner decides that the exterior or interior landscape needs to be changed, a landscape architect is called in. The architect analyzes existing landscape elements or features such as plantings, access means--paths and roads--topography, water features, lighting, structures, grades, and new landscape requirements or elements, and develops a proposed design. Usually, he/she is working with a program provided by, or developed with the advice of, the owner. The program is an outline which discusses how the landscape will be used, who will have access to the space, what function it will fulfill, what image it will convey, etc. Is the landscape solely for aesthetics? Does it serve a function, such as providing a park or recreational space? For years, landscapes surrounding commercial buildings were solely for aesthetics. Rarely was there ever any mention of security in the program. This means that there wasn't much concern by the architect for building security into the space. From here, it was usually all down hill.

The architect, if not aware or concerned about safety and security, will design in security problems or ignore opportunities to improve security. With your involvement, it no longer has to be that way. When you learn of a landscape project on your company's property, you must become involved from the beginning. It should be your primary goal to make an impact



on the program that is being developed. The building's management and the architect should become aware of the positive impact that you can make by designing good security into the landscape plan, and the negative impact that you can help avoid by designing out security problems.

Your next step should be to undertake a foreseeability study to determine the risk that exists on the site. What type of crime occurs in the area? What crimes have occurred on the site? What were the causes of the crimes on site? What crimes can be expected to occur on this property? How can those crimes be prevented? In fact, a foreseeability survey should not have to wait until you are planning a landscape project. You and your security consultant should have researched foreseeability in advance as part of your litigation avoidance program.

Next, determine the impact that various types of landscaping will have on the security of your facility. Will there be a positive or negative impact if you provide a wall or visual barrier? How will lighting affect the building's security and mission?

Ascertain the role that the exterior area plays in your overall security program. Does your exterior land serve as a visual no-man's land, calling attention to intruders before they enter? Does it serve to slow them down as they leave, making it impossible for them to carry away materials or property? Are you already using your exterior as a tool in your

protection program, or are you not providing adequate security at this time?

To understand the role of landscaping in security, it is useful to understand exactly what tools you have at your disposal. Fences, walls, water barriers, walkways, plants, living barriers, lighting, and other elements all impact security in some way. While some provide real security, others provide only psychological security. For example, anyone intent upon entering a museum after first crossing its beautiful artistic garden, will not be physically deterred by the hedges and walkways. But a good landscape design will preserve lines of sight between patrolling police or museum guards and the intruder, making the movement through the site risky. Meandering walkways slow down an intruder or escaping thief. Yet anyone leaving the walkway taking the "short cut" off the site will be noticed.

A museum or city park can never employ razor ribbon in its landscape design. Few facilities can. But living hedges can be a valuable tool. One museum, situated in a major city park where annual festivals occur, often experienced tree damage from visitors climbing the trees to gain a vantage point for rock concerts and other events. It replaced its trees with those bearing long thorns. In protecting a space, do not underestimate the role of what some believe to be merely "psychological security." If anyone really wanted to climb that tree they could have, but the creative security manager made them want to go



elsewhere.

Don't underestimate the need for compromise in filling your role as consultant to the landscape architect. There are certain stipulations that we all must live with. Those of us in museum security positions are very much aware of the need to compromise. Given our preference, most of us would opt for locking away our paintings in vaults and showing only good copies. We would put bullet-resistant glass in front of pictures on display and never allow the visiting public true access to the works of art. Of course, the museum's mission depends upon showing and teaching about the original and not a copy. Conservation limitations do not permit moving originals to storage vaults each night or even placing alarms on many objects. For similar reasons, we may not encase some objects in bullet resistant glass. Imagine a bank placing a quarter billion dollars worth of its assets in one room and allowing the public to come in and view it!

Those in other industries are just now learning that there are rules they must follow as well. When it comes to the exteriors of their beautiful buildings, owners often tie the hands of security directors who want to install improved security. After all, we build these buildings as to enhance our corporate image and are often willing to assume great additional risk in order to make the land surrounding our company headquarters do what we want it to do. We want it to express a positive image that razor ribbon and land mines somehow don't convey.

Your guidance will help the landscape architect understand the risk, and locate tools to reduce or eliminate it. Where an architect may think that a wall will be a security improvement, you may make him/her aware that a solid wall affording no sight lines through it actually increases risk. You might suggest that the same effect can be achieved by using a hedge or transparent fence. While the solid wall may be more difficult to breach, the thick hedge will permit greater visual security once the intruder makes the penetration. Together, you can find solutions that might not be readily apparent.

Explain to the architect the degree of risk to your facility and the role that you expect the landscape to play in improving your situation. Present your findings on the foreseeability of crime and the liability and obligation that your company--and the architect--have to provide protection. Express the philosophy that security and safety of visitors must be a paramount concern, and that how safe and secure visitors feel will determine, in part, the user satisfaction with the facility.

Examine the level of access that your facility needs or the level of access that it cannot tolerate. For example, if it is important that you keep cars from close proximity to your building perimeter to preclude the use of a car bomb, then a parking lot or street access is unacceptable in the plan within a distance to be determined by further study. If you need clear, quick access for firefighters or equipment, walls may not be



appropriate.

Crowd flow in your landscape plan, (and access/pedestrian control must be considered.) If, during the day, your goal is to provide a park like setting for your visitors, to move freely through the landscaped area on a series of trails or paths, to sit and read on benches, or to observe various plants or settings, then you can adopt a concept known as "graduated difficulty of access." Graduated difficulty of access involves using different trails or design elements which make access to various areas more or less difficult than access to other areas. Each level of access involves a greater degree of difficulty. By using this concept, straightforward access can be eliminated by gates or other barriers at night, while providing the full access to all levels by day. At night, the site becomes the no-man's land that slows intrusion and escape and makes an intruder visible.

Heavily landscaped areas using graduated difficulty of access concepts are conducive to the use of electronic security, components of which can be hidden among trails or landscape plantings. Your job is to make the architect aware of your ideas, and his/her job is to integrate security with landscape elements. Your job also is to establish rules for use of the space after it is determined so that they can be facilitated by the design. For example, if roadways or walkways through the space are to be closed at night, design gates and a means of securing the space at the time the

space is initially designed.

What are the most common landscape elements available to us? We discussed them briefly above.

Lighting is an important part of any landscape plan and an essential element of security. With lighting, as with some other elements of security landscaping, care must be taken to meet or exceed any standard or recommended practice which might prevail in your industry or in general. There is no one master book of security standards. Standards are being developed on a case by case basis and in some cases, de facto standards exist in the form of recommended practices. Also to be considered is the various case law affecting the need for security lighting on a specific landscape. If, for example, you include parking in your plan, much case law exists on the topic, and numerous texts can be used to determine the basic requirements. Your locality may even have building codes that must be complied with.

Lighting must be provided and scaled for all users of the space. Different lighting is required for pedestrians, building protection, vehicles, bicycles, etc. Thought must be given to providing backlighting or frontlighting. Exterior spaces should have a well defined sense of background. Background spaces should be illuminated unobtrusively, possibly from walkways, providing an ability to silhouette intruders. Foreground spaces should be lit by local lighting using maximum focus,



minimum distractions, and no glare. It is at the foreground objects, such as benches, structures and sculptures, that people will congregate. Light must be uniformly distributed and properly diffused, minimizing shadows. Where changes in grade occur, it is useful to have horizontal illumination along the ground plane.

In any case, the case law "standards" adopted for similar spaces with similar risks, such as lighting standards for parking lots, should be met or exceeded. The good practices in lighting, i.e. directing light away from the observing security forces, maintaining overlapping cones of light, and keeping light "even" with few contrasts, should be observed. \*The Parking Lot and Garage Security Handbook\* by Norman Bottom provides considerable background as do the "Security Law Newsletter" and the various Rusting Publication newsletters. While your situation may differ, the publications provide excellent resource material to help you determine the level of lighting and physical security that may be needed.

In determining light levels, be sure that lighting is adequate for CCTV, if required, and that plantings do not create high contrasts that make CCTV use difficult. Note that many landscape architecture texts and reference books contain suggested light levels. For example, one text uses the figure 0.6 foot candles of light as adequate on bicycle paths that cut through parks. While this may be sufficient for safety from collision, YOU, not the architect, should decide the light level that is

adequate for personal protection or for viewing intruders as they approach your building.

When planning landscape lighting, ascertain whether the landscape lighting will double as security lights or whether separate lighting will be provided for security purposes. This will become particularly relevant if, at some time, you need to reduce light levels. Without separate security capability, you may find that an energy conscious management has eliminated all lighting in an economy move.

Color plays an important role in landscape as well. It is particularly useful in aiding surveillance at a site when color CCTV equipment is specified. Incandescent lights have superior color rendition and a warm white appearance. Short lamp life may require greater maintenance and can reduce security if burned out lamps are not replaced immediately. They also have the lowest efficiency. If high pressure sodium, metal halide, mercury vapor, or low pressure sodium lights are used, discuss the effects these light sources will have on surveillance equipment and night color differentiation with your consultant.

Where changes in grade occur, it is useful to have horizontal illumination along the ground plane. This serves to outline the intruder against the background.

Topography and grading can play a critical role in landscape security. The trend in museum sculpture gardens and many corporate plazas is the



placement of sculpture below grade. Both the Hirshorn Museum and the Baltimore Museum of Art have had to take the expensive measure of adding a 24 hour guard in the garden area because it is impossible to see the area below-grade from the building. Not only are the works of art in an outdoor below grade sculpture court at risk without added protection, but also visitors cannot be seen by building guards. Fortunately, both of these gardens are not in areas with high crime or the issue of foreseeability would be involved as well.

Topography and grading can benefit security if properly installed or controlled. For example, one engineering firm offers topographic analysis to determine how the land slope will serve to deflect bomb blasts, and how the deflected blast will affect the specific structure. Slope also can be used as a backdrop to enhance lighting and view of movement, if properly placed behind the moving target and opposite the observer.

Walkways not only define, psychologically, where visitors may be, but they facilitate crowd flow and circulation as well. When pedestrian movement is perceived as purely functional and the goal is to move people expeditiously, walkways can differ from those intended to be recreational or aesthetic. When planning pedestrian walkways, great thought should be given to spatial relationships with other elements. Can someone hide behind a bush or a structure and reach a passerby? Does the hiding place provide sufficient

cover to allow an attack to occur undiscovered?

The appeal of watching other people is a common reason for the popularity of landscaped environments such as parks and grounds. Security personnel planning such spaces should use this fact in developing walkway systems that allow the security of other people without giving up the illusion of seclusion. Added security can be achieved by providing visitors with ever-present signage or visual cues that allows them to know a route of escape.

Walls and fences can be a useful tool to security in a landscape design. Again, lacking personal knowledge of security equipment and principles, architects need our advice in deciding wall composition and design. Make them aware that crossbars on an otherwise impossible-to-climb iron fence can turn the fence from a barrier into a ladder. A high thick hedge that provides a reasonably good barrier cannot accommodate an electronic fence protection system requiring a rigid fence.

What is the purpose of the fence? Is it privacy, safety, security, visual barrier, boundary definition, circulation control, environmental modification (hiding nuisances), or aesthetics? Will traffic control structures or barriers be used? If so, are they strong enough to really restrict vehicles? Much litigation has occurred pertaining to claims by hardware manufacturers that their products can stop vehicles when, in fact, they only discourage vehicles also.



Ask yourself--What structures will be on the site? How will they affect security? Will they produce a hazard to visitors? Will they affect security of the main building?

Will water be part of the landscape? Will it be used for aesthetics or as a security barrier? One major facility uses water as both an architectural feature and as a security barrier. It is impossible to approach the building exterior on two sides without a boat--except when the lake is frozen! Special care should be taken when bridges are provided for passage over ponds, as they provide considerable challenge to the security forces. Will there be pools and fountains? Will they be an attractive nuisance? Can ponds play a role in fire fighting? Will moving water in fountains affect exterior motion detection proposed? What furniture will be provided on the site? How does it impact the security? Will benches become an attractive nuisance for homeless persons or derelicts? Is furniture located where it can be properly supervised on patrols? Can the bulk of the furniture be observed by security? If furniture is placed in structures designed to provide shade, does this detract from security? Will vehicle control barriers obstruct views?

Will there be a need for utilities in the plan? Will the utilities affect the main building? How will the utilities be protected from tampering or sabotage? Will the landscaped area be above underground portions of the protected building? If so, how will this affect

security?

Will there be seasonal elements such as tents, canopies, awnings, umbrellas, outdoor furniture, vending carts, planters, decorative banners, special signs, etc. that might alter the security plan? Can these be used to hide bombs or weapons? Will they obstruct views? What steps must be taken at the time of design to accommodate these added risks and obstructions?

Plants and plantings are an inevitable part of a landscape design. The types of plants that can be used in any given area will depend upon many considerations, including length of growing season, high and low temperatures, water and rainfall, soil, etc. While it is not possible to recommend a large variety of plants that can be used in all environments, there are some popular plants that can be used in many parts of the U.S. to assist security. Darrell Willson, a CPP, former Executive Director of Protection Services for the Art Institute of Chicago, and a former landscape professional, offers the following suggestions.

Hicks yews are the most versatile evergreen plant. The density of the plant will generally disallow intruders and can be planted tightly enough to prevent someone from hiding among the bushes. The Red Barberry is also a versatile plant with thorny branches and deep red leaf color, making it an ideal plant for hedging where a physical and psychological barrier is needed.



Willson also recommends the Washington Hawthorne, a thorny ornamental tree which reaches approximately 25 feet in height. The thorns provide no real hazard, but make hiding in the tree unlikely. Another ornamental, the burning bush, makes a good hedge material and foundation plant. Its tightly woven branch structure is a plus, and its thorns preclude anyone from hiding among the plantings.

Pyracantha is a thorny plant that also serves as a foundation plant where lots of room is given for growth. This plant can be shaped to create a good wall cover and is ideal for use against perimeter walls, where it is not desirable to allow intruders to make a close approach.

In tropical climates, there are other selections that can be made due to thickness and leaf texture. Palm trees provide an excellent alternative. With their foliage at the top of the tree, they provide little room for hiding at the ground level.

Foundation plantings should be established with low growing, tightly branched material to reduce the advantage trees provide for intruders. Perimeter plantings should be thorny so that the opportunity for hiding would be reduced. The landscape plan should not include large bushy plants. Hedges are important to prevent intrusion, however, they must be chosen carefully or they can become a place to hide.

If it is desirable to allow people to

walk freely through the landscaped area but prevent them from laying or sitting on the grass, grass can be substituted with gravel, sand, or ground-cover plantings. Great thought should be given to the mature size of all trees planted. At full size, will they provide easy climbing access to building roof systems or windows?

Landscape architects often use dense plantings and walls to reduce sound distractions from traffic or outer sources. While it is desirable to make a quiet setting for users of the landscaped area, take care not to allow sound proofing to reduce your ability to conduct successful surveillance of the site. Sound control is usually accomplished by dense vegetation, solid barriers, earth berms, and by providing spaces, like the sculpture courts previously discussed, below grade. Nearly every solution for sound control that the architect may propose will have a negative impact on security.

What are the various steps in the landscape process? Your architect will begin by assessing the site and preparing a program. As discussed earlier, you must get your thoughts included in the earliest steps, or you may miss the opportunity to contribute to the process. Next, the landscape architect will prepare a design which will, at some point, include construction documents. Construction documents will include drawings and specifications, which will be used for bidding the project to contractors. Drawings will be drawn to scale so that contractors can assess



the spatial relationships of proposed objects to each other and to existing known points. Specifications include detailed descriptions of general conditions, special provisions, materials, quantities, and information on installation. You must review these documents very carefully and use them to include any aspects of your concern that have not been included.

If a general architectural or engineering firm is not involved in the process and you find it necessary to include security lighting, CCTV, or alarm components in the plan, it may be necessary to have a security design professional, such as a capable security consulting firm, prepare drawings and specifications for the security system components. Do not delay in bringing in security expertise.

Have your landscape architect include elevation drawings in the drawings that he/she provides. Elevations are drawings showing what the setting will look like if viewed from various directions. Elevations allow you to see the height of various trees or elements as they will appear, and in scale. Structures, bridges or other barriers do not change in size, but plantings do. Be certain to discuss in detail the affect that plantings will have when full grown. What maintenance will be required to keep plantings under control to the extent that they will not obstruct sight lines, lighting, and CCTV or alarm equipment? Will the owner make the necessary commitment to maintain the plantings so that they will not grow to problem heights or width? Also to be considered is the affect that full grown

plantings will have from above should you need to observe from the air or from upper floors.

Once the landscape plan is accepted and construction begins, it will be necessary to make plans for adequate security during this process.

Another consideration is the affect that the surrounding landscape will have on the protected building. If the area is prone to range fires, as is the case when the Santa Ana winds and dry conditions threaten the hills surrounding Los Angeles, it might be preferable to look at the added risk your plantings might cause. In addition to fire, other natural disasters might be foreseeable. Do you live in a flood area? Are you prone to earthquakes? Do you have electrical storms? Will that new flagpole attract lightning? Will that observation tower collapse? Will the snows drift as a result of your landscape? Should those dry plants be replaced by rock gardens to control fires?

When planning landscape designs, employ modern, electronic security devices as part of your integrated package, which also includes lighting, CCTV, guards, walls and physical barriers, etc. On-screen motion detection can be an appropriate tool in detection of activity in the space as can pulsed infrared beams, which criss-cross walkways and planted areas. Hidden vehicle detectors also should be considered as appropriate.

A final concern in landscape security comes when your hands are even more tied by the fact that your



landscape involves restoration of a site to its original historic situation. You cannot control the use of elements as carefully as you otherwise might.

Historic landscapes are the landscapes of the past. They do not normally include wilderness or natural landscapes and usually focus on the cultural landscape and the human contribution in the existing space. They reflect the unique tastes, technologies, and needs of the period portrayed. Usually the landscape included gardens, plantings, structures, furniture, etc. The degree of control that you have on the design elements will depend upon how historically accurate your restoration of the landscape must be.

When the security director finds that he/she cannot control the landscape by changing topography, plantings, walkways, lighting, etc., plans to improve security by improving the landscape must be abandoned. The security director should concentrate on providing "old fashioned" protection afforded by guards and conventional means. It must be recognized that the intrusion of modern security equipment probably will be frowned upon by the architect, and every effort will have to be expended in designing in concealed cameras, alarms, etc. Thus it would be wise to obtain the assistance of a security consultant, specializing in historic restorations, at the earliest phase in this process.

Much can be done by the security professional to improve security by manipulating the landscape plan at the protected site. Security landscaping is simply a matter of manipulating the

elements of landscape architecture in a positive way and using every opportunity available to you. To be successful, you must be an active participant in the development of the plan. You must consider current and future crime trends in determining appropriate levels of security, and you must evaluate the criticality of the protection mission at the main building.

The responsibility for using landscape architecture as a tool of physical and psychological security rests with the modern security professional.