WHITE PAPER

Hardening the Perimeter:

The Role of the Guard Booth, Security Solutions and Best Practices.

BY DAVID KING

Mr. King has 29 years of experience in the perimeter security industry and is a sought after consultant for government mandated post- 9/11 security upgrades. He is currently VP of B.I.G. Enterprises™, and is a recognized authority on perimeter control, security, and surveillance.

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Executive Summary

The Situation:

In the post-9/11 global security environment, the perimeter defense challenges facing facility directors and safety managers have become increasingly complex. Given a persistently difficult global economic environment, emphasis on the longevity, survivability, and flexibility of major perimeter security products like guard booths and guard stations, is a major motivating factor for decision-makers in domestic and overseas markets.

Myriad critical assets: state and federal buildings, agricultural sites, corporate campuses, cultural and entertainment venues, ports, sports arenas, refineries, nuclear facilities and overseas military installations need flexible, cost-effective solutions to defend them from threats both domestic and foreign.

Where guard booths are specified, there is no 'one size fits all' answer, as each critical asset will have unique, site-specific requirements. Evaluating the right solution for each application requires an understanding of certain key concepts, not limited to, but including:

- Defining the threat
- Surveying the asset site and the surrounding environment
- How to evaluate guard stations—key considerations
- Industry-specific designs for special applications

About the Author

David King is Vice President of B.I.G. Enterprises™, a California corporation that has been manufacturing a comprehensive line of security and revenue control booths since 1963. Mr. King has 29 years of experience in the perimeter security industry and is a sought after consultant for government mandated post- 9/11 security upgrades. He works extensively with architects, contractors, government officials, ballistics engineers, and suppliers charged with protecting key infrastructures.

Under Mr. King's leadership, B.I.G products have achieved numerous advancements in custom guard booth manufacturing. Their state-of-the-art manufacturing technologies and designs produce exceptional products that attain the highest level of blast-resistance in the industry.

His clients include all divisions of the U.S. military, the Nuclear Regulatory Commission, the New York Stock Exchange, and hundreds of universities, transportation, chemical, petroleum, agricultural, manufacturing, and corporate facilities.

Mr. King resides in California.

The Issues:

Decision-makers charged with purchasing a stock structure, or designing a custom guard shelter must:

- Maximize the survivability of the shelter and the lives of security personnel within.
- Select a design that provides uncompromising security without sacrificing architectural integrity, design flexibility, or ergonomics.
- Manage costs by considering component strength, and finish longevity.
- Examine the potential benefits of guard structures designed to exploit mobility.

In this paper, perimeter security expert Dave King addresses these challenges, provides perspective, and offers practical, cost-effective solutions.

The Current Perimeter Security Environment

Since 9/11, numerous victories both large and small have been achieved against al Qaeda-inspired terrorists, and other extremist groups both foreign and domestic. Each refinement in global anti-terrorism strategy brings some measure of success, yet in their turn, actively networked terrorists, and stand-alone extremists alike, display persistent patterns of adaptability, and through evolving tactics and techniques, continue to evade detection and penetrate critical assets.

Adding to these pressures are concerns about border porosity, and the particularly pernicious drug-related violence along portions of the southwestern U.S. boundary.

Guard booths, stations and shelters are defense strategy linchpins in most applications, and are becoming an increasingly integral part of the perimeter defense planning strategies of numerous organizations. Guard shelters are a first line of defense, allowing security personnel to function effectively as first-responders by defending assets, and alerting appropriate

authorities through their chains-of-command. Once in place, the booths must function seamlessly day after day in frequently harsh environments.

Before evaluating the efficacy of different guard booth configurations, and before selecting a stock, or custom-built prefabricated design to protect a given asset, it is helpful to bear in mind the following concepts:

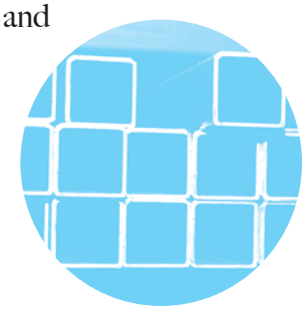
Protecting Targeted Assets: Defining the Threat, Surveying the Site, Developing Specifications

- A highly motivated adversary will conduct surveillance of a facility prior to attack. If the adversary recognizes that defense systems and security personnel are in place, there is always the possibility that the adversary may decide to target a less problematic facility.

- When evaluating and selecting a guard shelter or defense system, a threat profile for the facility should be developed, and the techniques an adversary might use must be considered. This data may relate to the potential for vehicle penetration, and the potential for weapons exchange, or use of explosives. The data may also relate to what is known about potential adversaries, their ideological goals and motivations, their potential numbers, possible tactics and capabilities.

- For security perimeters, it is recommended that the minimum safe stand-off distances, (MSSD) be maximized whenever possible, and that any vehicle checkpoints be located as far as possible from identified assets. This may be more difficult to achieve in urban settings where space leading to the facility from a road or curb is tight.

Ultimately, various facility-specific security evaluation tools guide decision-makers for each facility in conjunction with construction standards specific to their industry, or as mandated by government organizations such as NRC, DOT, DRS, NSSC, or Army Corp of Engineers Protective Design Center. By using accepted methodologies, executives, contractors, architects and engineers charged with procuring guard shelters whether for new construction or to meet mandated upgrades, can better assess and prioritize potential threats and vulnerabilities.



Understanding and Evaluating Guard Booths: Technologies and Considerations

Decision-makers need to be well-positioned to make the best possible choices from the range of alternatives in the security marketplace. More often than not, a guard booth or shelter will be but one aspect of a multi-faceted security defense system. Thus, it's essential to understand a range of currently available perimeter security technologies.

Perimeter Security Technologies

- Sensing and Detection - Perimeter protection experts typically divide sensing into four categories: detection, delay, assessment and response. Common systems in this category include fence mounted sensors that detect the cutting, climbing, or lifting of the perimeter fence; volumetric field sensors using microwaves that create a difficult to defeat, invisible field of protection; buried or covert cables using a radio frequency field; infrared sensors using a light beam to detect movement. Ideally, these detection technologies would be integrated with a combination of closed circuit television, and security guards on duty in a robust command and control center.

- Fencing – Fences assist in denying, deterring, and delaying penetration. Chain link is the most common and least expensive fence material. It is also the least aesthetically pleasing, and offers the least amount of delay resistance to attempted breaches. Welded wire, expanded metal, and punched metal, constitute a second category of fence fabric. These are more expensive, yet offer additional breech protection and can be vinyl- coated to add color. Anti-climb barriers may also be added to most types of fencing.

- Barriers – Active and passive vehicle barriers like bollards, Jersey barriers, vehicle-arresting walls, pop-up wedges etc., prevent an unauthorized vehicle from penetrating a perimeter forcing adversaries to move on foot, which extends the time it takes them to reach a target. Assuming that the facility has good detection, assessment and communications plans in place, this extended period gives responders additional time to move into position in order to interdict the perpetrator. It also gives extra time for authorities to activate their emergency notification systems so that all personnel within the facility and adjoining areas may take immediate, appropriate action.

- Guard Booths – Guard booths and stations are key components of most perimeter security plans. Security personnel are a facility's eyes and ears, and are a critical first line of defense. At the highest level of security, such as nuclear power plants, bullet and blast resistant booths (BBRE's) equipped with sliding gun ports and special exterior lighting are often specified so that the booths act as posts where threats can be actively engaged if necessary. State of the art booths like those manufactured by B.I.G.™ Enterprises are both tough, and infinitely customizable.

- Other Technologies – Additional security technologies include: speed gates that that can work with physical security readers such as license plate recognition and under-vehicle cameras; thermal imaging cameras that allow for full visual assessment under any light condition; closed circuit television with integrated facial recognition cameras and software.

Evaluating Guard Booths: Some Considerations

While sensors, fences and barriers are important to overall security, the guard booth is the only major piece of equipment that is used every day. The purpose of the guard booth is to give security officers an advantage against potential threats. Inside the guard booth, armed responders are going to need to have the capability to interdict, and respond to high threat levels with a high probability of survival. Guard booths frequently defend facilities that are critical to life, the environment, and the economy,

therefore, the booths and shelters need to be fabricated from the best materials, have exterior and interior finishes that will endure, possess the best window and door hardware available, and incorporate correctly sized HVAC for adequate climate control.

Guard booths and shelters must be ergonomically sound, and configuration-friendly, as they generally house monitors, gate controls, duress buttons, computers, and various site-specific electronics and surveillance equipment.

Guard booths and shelters must also be considered from an architectural and aesthetic standpoint; they serve as visual deterrents for potential terrorists, and also as visual statements, defining the image of the facility.

Once a given facility has done a security profile and evaluation, and has determined the need for a guard booth or shelter, what questions do decision-makers need to consider before specifying a guard booth design?

The following questions may be used as a guide:

Key Questions to Ask Before Specifying a Guard Booth

1. How will occupants, visitors, and other personnel utilize the booth? Will the booth require areas for personal comfort such as toilet and or refrigeration? What equipment will be mounted inside the booth, and should there be included space to expand the control area at a later date should additional electronics or equipment need to be installed?

2. Will the booth be located in the most secure/advantageous position? Will you need to consider bullet and blast resistance, or radiation hazard protective fabrication? How will the structure function in relation to other key components of new or existing perimeter security?

3. What are possible environmental impacts? How will the guard shelter need to be designed to meld seamlessly into its environment, make an appropriate architectural statement, and meet any historic design regulations? Will harsh climatic conditions such as salt spray or excessive temperatures impact the shelter and its fit and finish?

4. Will the design be ergonomically friendly, conducive to work, and easy to access? Make sure the vendor or manufacturer understands current ADA (The Americans with Disability Act) requirements. Special attention should be given to the layout of command and control center areas of the shelter or booth to maximize comfort and efficiency.

5. Should the structure be prefabricated and mobile, or stationary? Approximately 25% savings can be obtained through pre-fab construction, and many booths can be dismantled and reassembled, or moved to another location. This provides flexibility, and also potential tax advantages since they could be classified as 'tangible' as opposed to 'real' property. A company's CFO should investigate any potential tax advantages.

6. How knowledgeable are potential manufacturers? Are you getting expert advice? Do they offer multiple solutions that help save money without sacrificing quality?

7. Can the manufacturer accommodate 'truly' custom design? What options are available for standard models, and how far will the manufacturer go to tailor the components to meet your needs?

8. Will the manufacturer be able to meet the project completion deadline? Will the manufacturer offer timely response to adjustments or modifications after the installation?

9. What warranties does the manufacturer offer on materials and workmanship? Be discerning. Read the fine print for exclusions.

10. From spec to purchase order, does the manufacturer offer a guaranteed firm price for at least six months? Prices should include ALL necessary costs. In the case of government agencies, it is preferable to work with a manufacturer who has a current contract with The General Services Administration.

Booth Design for Special Applications

Historic Areas

Structures located within historic areas have design requirements mandated by local regulations or The Department of the Interior's Historic Preservation Guidelines. In these instances, custom products and finishes such as those offered by B.I.G.™ Enterprises can provide facilities with designs which will meet strict architectural mandates, and give the guard shelter an aesthetically pleasing look. If the proper authorities are not consulted, and the required permits not obtained, regulators could be within their rights to have a non-conforming structure dismantled and removed.

High-Security Sites

At the highest level of security, such as nuclear power plants, military installations, chemical plants, ports, and refineries, bullet and blast resistant booths (BBRE's) may be required. Here, booths may be stationed at multiple locations, functioning within concentric rings of security. Again, minimum safe stand-off distances, (MSSD) must be maximized whenever possible. Booths can be equipped with sliding gun ports and special exterior lighting so that security personnel can respond to active threats. Particular construction materials may be required where there is a radiation hazard.

Exploiting Structure Mobility

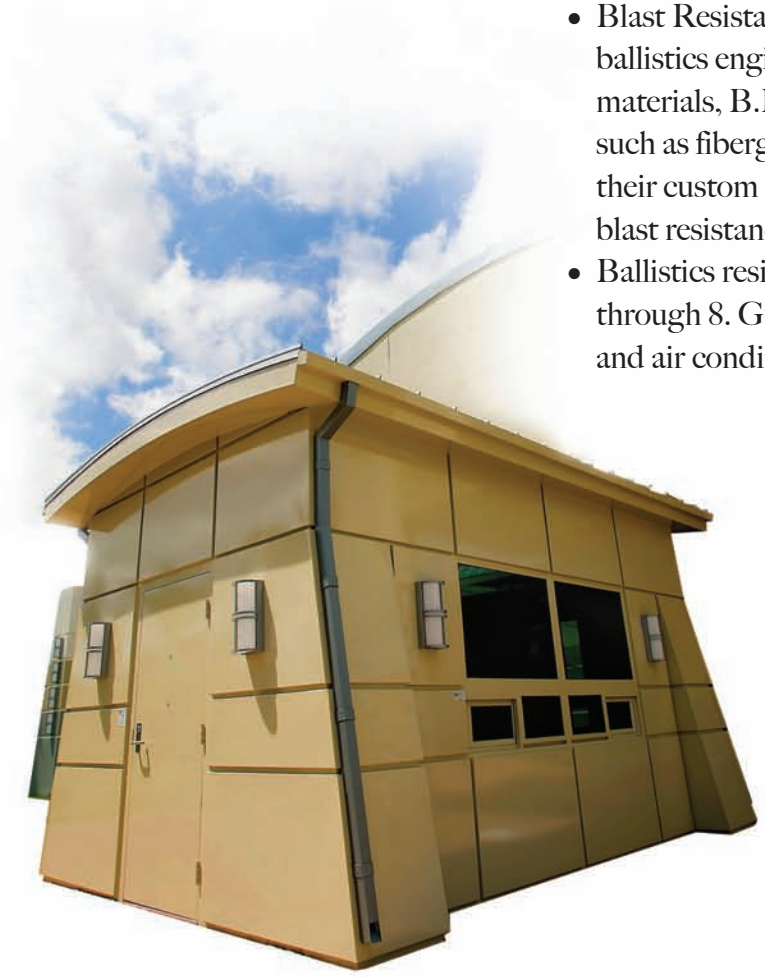
It is common for sports and entertainment arenas to require a certain amount of flexibility when managing vehicle access and foot traffic. In large, entertainment venues, accommodation must be made for large tractor trailers and heavy construction equipment to allow for set-up prior to an event, and for break-down post-event. In these cases, it may be prudent to consider custom, mobile, prefabricated ticket and traffic control booths and guard shelters. Utilizing mobile structures may also lead to significant cost savings and tax advantages.

B.I.G. Guard Booth Solutions

B.I.G.™ guard booth designs are innovative, and meet the exacting demands of regulatory agencies, security directors and facilities managers, and provide a platform for creativity and flexibility. B.I.G. Enterprises, Inc™ is a member of: N.P.A., I.P.I., B.O.M.A., A.S.S.I., C.P.P.A., C.S.I. and P.A.C.

Blast and Ballistics Resistance

- Blast Resistance, Working extensively with leading ballistics engineers and suppliers of ballistic resistant materials, B.I.G. employs highly specialized materials such as fiberglass composites and armor-plated steel on their custom steel booths to achieve the highest level of blast resistance in the industry.
- Ballistics resistance: UL, NIJ, MIL-A-46100 Level 1 through 8. Gun ports. Hardening of floors, hatches and air conditioners.



Customization/Ergonomics/ Design Options

- HVAC: Wall mounted heat pump, split-system wall with aesthetic treatments, roof mount, high output heaters, combination systems, baseboard heaters, ventilators, passive / powered, louvers, thermostat controls, exhaust vents, ceiling vent fans.
- Cabinets & Drawers: Stainless steel, wood, custom commercial cabinet (to your design).
- Cash Drawers: Currency transfer, floor safes, wall-mounted safes, drop safes, Class B safes, or designed to specification.
- Restroom Facilities: Frame Only, complete systems, self-contained systems, commercial wall mount systems, meets handicap access requirements.
- Floor: Steel plate with tile, carpet, anti-fatigue mats, aluminum diamond plate, exterior grade plywood, sheet or roll vinyl tile, fork-lift pockets, trailers, automatic lift/lower actuators.
- Miscellaneous: Pad eyes for crane lifting, elevated platforms, interior and exterior intercom systems, insulation to specifications up to R-36, wall carpeting (impact resistant), alarms (Security), extended engineering loads for roof and floor up to 200# per sq. foot, electric panels to specification, quick disconnects, transformers, equipment shelters, electrically operated rolling shutters.

Aesthetics/Architectural Integrity

- Custom interior and exterior finishes include: brick, stucco, architectural exterior stone panels, stainless steel, diamond plate, and multi-color treatments. Preparation for on-site finish. Paint can be color-matched.
- Paint quality: B.I.G.'s state of the art industrial painting system includes a two-part epoxy rust-inhibiting primer coat, combined with a top coat of two-component polyurethane. This finish provides years of trouble-free wear. Before the application of coatings, every guard booth is treated with a special cleaning/prep process utilizing nitric, and flourozirconic acids to ensure maximum paint adhesion.

Independent labs tested B.I.G.'s finish in real-world weather conditions, and the finishes are certified to ASTM B117N standard.

- Window longevity: B.I.G. sliding windows are manufactured from steel track, and employ four, steel ball, or Delron bearing wheels to withstand continuous use and abuse. All window and transaction window components are fabricated from the highest quality hardware. Special transaction-style windows are available for extreme weather conditions. All B.I.G. window tracking systems come with a lifetime warranty.

Cost Savings

- Approximately 25% savings can be obtained through pre-fab construction, and many booths can be dismantled and reassembled, or moved to another location. This provides flexibility and also potential tax advantages since they could be classified as 'tangible' as opposed to 'real' property. A company's CFO should investigate any potential tax advantages.

Four Case Studies

#1 Enhancing Security at Nuclear Power Plants

To comply with Nuclear Regulatory Commission mandates for enhanced security, a major Washington State public provider of nuclear power required guard booths that could perform as powerful first lines of defense against potential threats. Thus, the booths had to be both bullet and blast resistant, containing additional features that would give security personnel greater capacity to screen employees, vendors, and visitors to the plant. Underlying these requirements was the need to keep operating costs in check.

In response, the plant purchased High-security, permanent guard booths from B.I.G.™ Enterprises. The bomb and blast-resistant shelters included bulletproof glass, comprehensive defensive armor, protective sheathing, and machine-gun ports. The plant's Supervisor of Security remarked: *"B.I.G. booths provided a high-quality, cost-effective enhancement to our new checkpoint strategy. They were easy to install, and are significantly sound. The booths are the capstone of our security initiative."*

#2 Port Security

Protecting America's busy seaports from acts of terrorism is a top priority. However, as with all ports, it is not only maritime issues that need to be addressed, but also the tens of thousands of wheeled freight vehicles, and the terminal points of the strategic rail systems that serve them daily. Because of a port's sheer size and porosity, safely managing and monitoring huge volumes of inbound and outbound transport requires a complex choreography. One key Texas port asked its security managers to examine potential vulnerabilities, and devise solutions. It became clear that hardening their perimeter was a major issue, and that the port required a number of infrastructure improvements to meet new security regulations, including a complete rebuilding of the security gates.

Because of their reputation and experience, the port selected B.I.G.™ Enterprises to deliver thirteen guard booths manufactured in strict compliance with State of Texas codes, to be placed at major points of entry. After installation, the port's Security Manager said: *"We work in a heavily commercial, mobile area, located in a harsh physical environment. We were looking for booths of outstanding quality, that would provide superior protection and functionality, and that would endure. The B.I.G shelters met all of our criteria, and we're happy with our choice."*

#3 Agricultural Facility

A vital west coast produce company seeking to beef up their security in a post- 9/11 environment, knew that guard houses were critical to the safety of their large operation. The company wanted gatehouses that would be weather-tight, attractive, and mobile, able to support a stainless steel, electric toilet that required no plumbing. Appearance was also a factor; management wanted the main guard booth to match the corporate office.

They looked to B.I.G. for a guard house solution. After the booths were in place, the company received positive press in trade journals, and in the local press. The manager stated: *"The guard houses outperformed expectations. The structures were solid against high winds, and tight against unseasonable rains. Our customers and growers know just how seriously we take the security of our facility, and our employees feel more secure. When we told B.I.G. how critical the main guard house was to our safety, they delivered it a week early."*

#4 Entertainment Venue

A major sports and entertainment venue in the southwestern U.S. regularly hosts crowds of 15,000 spectators, utilizing 2,000 or more security personnel. After the 2002 terrorist attack on the Nord Ost Theatre in Moscow, security at public cultural and sporting events became a chief motivating factor for promoters and facility managers.

Originally, the park built stationary booths on-site, but problems arose when trucks offloading for trade shows and various events constantly hit the structures. B.I.G. worked with the security and facility managers to create a custom, mobile booth solution. Customization can mean better defense. With mobile booths, managers can create multiple layers of security with maximum stand-off tailored to each event, which helps discourage would-be criminals. In addition, booth mobility addresses the need to customize parking space, and deploy security personnel to greatest advantage. The Security manager reports: *" The mobile booths from B.I.G. are a critical component of our security detail. They allow our event staff, police, and county sheriffs to better monitor crowds and control traffic. When you are talking about a complex as large as ours, you had better be able to protect the facility, and the patrons inside."*

Conclusion

Security is a continuous process. Perimeter security technologies will advance as threats from terrorists of all persuasions continue to evolve. Decision-makers can face the future with added confidence if their defense strategies incorporate state of the art tools and technologies.

B.I.G.™ guard booth designs are tough and innovative, meeting the exacting post-9/11 demands of regulatory agencies, security directors, and facilities managers. B.I.G.™ booths, shelters, and security command centers provide a platform for creativity, flexibility, and maximum defense.

Additional technical information and specifications can be found on The B.I.G. Enterprises website (www.bigbooth.com)

For further information, interested professionals may contact:
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