

# ARCHITECTURAL SOLUTIONS FOR A SAFER WORLD

Unfortunately, many organisations disregard certain elements of perimeter security when embarking on a new construction project. But underestimating the importance of a comprehensive security system could be detrimental to the health and safety of the individuals that enter the premises.

Integrating protective security measures into public sites is essential for mitigating the threat of a terrorist attack. Incidents such as the Glasgow airport attack of 2007 are substantial proof of this. When considering security, people will often visualise guards, alarm systems or even network and cyber measures. Rarely, would an imposing Hostile Vehicle Mitigation System (HVM) come to mind.

However there are many important elements of a robust security system; the greatest security plan

involves the design and installation of components within the architectural structure of a building. This happens long before an alarm system can be installed. The key objective of a HVM system is to prevent access to a crime target and create in the mind of the criminal, a belief that an attack could present serious personal risk. This is achieved through the intelligent and imposing design of road blockers, bollards and barriers.

Not surprisingly the capacity and mobility of a vehicle offers convenient storage of explosive devices for criminal and terrorist organisations. In a hostile vehicle attack, a vehicle is rammed or manoeuvred into a target location, often a high-profile site compromising large numbers of people.

The attacks in 2007 at Glasgow airport saw two men ramming a Jeep carrying propane canisters into

*The HT1-Raptor can be raised out of the ground at the first sign of threat*





the doors of the terminal. It is reported that the security bollards and blockers placed outside of the terminal were the sole reason that the criminals were unable to cause significant damage to the building and nearby members of the public.

At the very early stages of a building's construction process, architects and clients must work together to create sites that are able to withstand vehicle-borne attacks, which in today's rapidly changing security environment remain a serious topic for consideration. Anyone currently involved in commissioning and managing new developments should consider security requirements from the outset. HVM measures need to be firmly entwined into the fabric of new proposals. There is considerable scope in the planning of facilities to include proven and effective protective security measures. After all, buildings are much more than just structures, they are exposed targets. Whether through small design decisions or larger security product installations, a building's design scheme can be its first line of defence against a wide range of potential threats, ranging from petty crime and vandalism to bioterrorism.

In order to mitigate targeted attacks conducted by criminal organisations, a site needs to create a 'standoff' distance between potentially hostile vehicles and the property in question. Vehicles are either blocked off entirely or at least forced to slow down. This is achieved primarily through the installation of street furniture such as barriers, road blockers and bollards, which are designed to stop dead vehicles travelling at high speeds towards a building.

Airports, shopping malls, banks, stadia, government

buildings, embassies; the list of vulnerable properties requiring protection against hostile vehicle attacks is limitless. However, the level of threat does differ depending on a site's particular function and location. It is therefore necessary to consider all threats to a site and its operations including, traffic movement, the environment, and the site's purpose.

If installed during the initial planning process, hostile vehicle mitigation systems can integrate seamlessly with the surrounding environment and architecture. Sites must consider the design of HVM measures holistically to ensure the correct level of protection is achieved without sacrifice to aesthetics. In almost every project, be it commercial, public or historic, the look and feel of the environment is critical. Often, outer covers can be created for products upon special request, to suit the particular requirements of the site.

Stadia and shopping malls often demand a more modern design in contrast to more traditional, historic buildings, which require more covert security solutions. In order to effectively deter criminal attacks, many HVM products are designed to appear imposing and formidable. An example of this is the HT1-Raptor, which comprises a tooth-like structure that can be raised and lowered out of the ground.

Many HVM systems are now designed to operate with minimal noise pollution so as not to disturb a location's natural atmosphere. Often, pedestrians will walk down the street completely unaware that certain pieces of street furniture are designed to defend against and deter vehicle-borne attacks. Structures are usually placed as far away as possible from the vulnerable asset, typically

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near the kerb line with air gaps in between to allow for pedestrian and wheelchair access.

The security industry is not always the fastest to respond to new ideas, and with larger projects often specified years in advance, it can be a slow process for new, innovative products to find their way onto the market. Ideally, rapid and substantial changes in technology, the world security scene and individual site requirements should dictate the design of new products that come to market. For example, certain sites – such as car parks – do not allow for deep excavation, in which case, systems are designed to need as little as 500mm for excavation with no additional rebar or pre-casting of the concrete.

Traditionally, the perimeter protection market has consisted of large deep-mount road blocker solutions, which require serious excavation; it is only relatively recently that shallow-mount solutions have become available.

Counter-terror product manufacturer, Heald Ltd developed the Matador, which takes this modern trend to its logical conclusion, offering a system that can, in most cases, be bolted to an appropriate foundation.

The option of shallow mount is a huge advantage not only to the speed and ease of fitting, but also in providing high security in areas where a deeper installation is simply not an option due to beneath-the-surface issues such as under-road ducting or sewage pipes.

All sites will require a specific assessment before HVM measures can be suggested. Once the vulnerabilities of the site have been assessed, suitable measures can then be proposed. There is certainly no 'one size fits all' response, as each and every situation requires an informed and tailor-made, bespoke solution.

In order for a site to function, members of the public must have the ability to safely live, work and play in buildings that are sheltered and secure. Pedestrian access and safety is also taken into account along with the integration with other security systems. HVM systems are designed to be pedestrian friendly, allowing for safe access to a site with no trip hazards.

With hostile vehicle mitigation systems evolving in line with increasingly complex terrorist threats, the need has emerged for more sophisticated and secure control systems. HVMs can usually be operated either manually or powered by intelligent monitoring systems. For example, Heald Ltd's Hydra has revolutionised the perimeter security industry with its unprecedented levels of interaction with automatic security barriers. Moving on from the simple push-button control, it allows users to control and monitor multiple road blockers and bollards securely via smartphones, tablets and computers. It can be set to text regular updates to a user's phone or to text only when an issue is detected, meaning that users can be kept fully up to date from anywhere in the world about the security of their site.

Reliable HVMs are crash tested against the highest international standards to ensure effective use and many products will even continue to function on a site even after being confronted by terrorist attack. Continued successful operation, post impact, is essential for protecting against a potential secondary attack.

There are various standards available, which test a barrier's ability to withstand a particular impact of a certain type of vehicle at a specific speed. The European standard IWA and the international PAS6, to mention but a few. With a wide variety of high-performing hostile vehicle solutions on the market and rigorous testing standards in place, today's solutions are well placed to meet the requirements of even the most challenging of sites. That being said, the security industry cannot afford to become complacent. The international threat level has increased substantially in recent years and as new threats arise, security manufacturers must continue to design functional and advanced products to ensure a safer world.

**Debbie Heald is the Co-owner and Managing Director of perimeter security product manufacturer, Heald Ltd. The company protects a number of high-profile sites around the world against the threat of vehicular attack. Heald also supplies many organisations with effective traffic control solutions.**

***The key objective of a HVM system is to prevent access to a potential target***



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