

The threat of attack by vehicle-borne IEDs remains a grave concern. **Marcus Gerrard** discusses how the PAS 68 anti-terrorism rating has driven the innovation of a new generation of vehicle-mitigation measures designed to protect critical infrastructure

PROTECTING THE REALM

Since 9/11, anti-terrorist bollards and barriers have become an integral part of the security marketplace. The purpose of these specialised products, also known as “hostile vehicle mitigation measures” is to stop vehicle-borne threats, whether driven by terrorists intent on causing destruction or criminals attempting to cause damage or gain illegal access. Until the attacks in New York and Washington, these specialised anti-terrorist barrier systems were only made and supplied by a few US companies. In the UK they were only deployed to a select few locations considered to be at high risk of terrorist attack – and you could tell when they had been, as our key infrastructure and buildings would look like fortresses protected by large concrete blocks or bollards the size of tanks.

Following 9/11, the British government put together a team of leading experts to write and compile a British standard for the impact test specifications for security barriers; this benchmark is now known as the British PAS 68 standard.

When a manufacturer wishes to design and build new PAS 68 barriers for the marketplace, they must be tested to this standard, which in simple terms means crashing large trucks at different speeds into the barrier, blocker, fence or bollard. If the bollard or barrier passes these stringent independent tests, it is then awarded a PAS 68 certification. The tests are carried out by specialist test houses, usually based in the UK, and can cost the manufacturer upwards of £50,000 per test.

The 2007 terrorist attack on Glasgow airport, in which a jeep Cherokee loaded with propane canisters was driven into the doors of Glasgow airport, was a wake up call for the UK. Since then, the British government and the counter terrorism industry have had to raise their game to provide more innovative bollard and barrier solutions. At the time, Safetyflex Barriers’ background was in the manufacture of suspensions springs for commercial vehicles, and it supplied clients like the Ministry of Defence (MoD) and commercial vehicle manufactures. Safetyflex’s design department had, however, developed a special steel made from its own chemical composition, which allowed it to make a small barrier system for car parks; when the car impacted on the barrier, the special steel would absorb the impact



and bounce the car back. The company was therefore approached to be involved in the PAS 68 programme.

The company was given a brief on what it needed to achieve: to design a barrier and barrier system from its proprietary steel which would stop a hostile vehicle attack within certain vehicle weight and speed parameters. At the time most barrier and bollard systems were dug very deep in the ground – some up to three meters deep – with extensive foundations; the systems were very bulky and overbearing. Using the original car park barrier as a starting point, Safetyflex engineers designed the first PAS 68 barrier in the world, made from this special flexible spring steel. The initial designs featured a shallow foundation of only 400mm, but could stop a 7,500kg truck travelling at 30mph.

Since then the market has expanded rapidly to include some great British companies, and I very much believe that the British are leading the way for anti-terrorist bollards and barrier design. While in the past many PAS 68 blockers featured foundations three meters deep in the ground, they can now be very shallow and even surface-mounted. PAS 68 gates systems have also been designed, ranging from those with very deep foundations to more advanced models featuring very

Ubiquitous security:
PAS 68 rated bollards are now used at sites across the UK, including the O2 Arena (left) and Edgbaston cricket stadium (right)



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shallow foundations and the new British-designed PAS 68 bi-fold gates.

Within the last three years new requirements have emerged and designs have had to change again, requiring the industry to listen and work with government bodies, security consultants, architects and the MoD. While demand has continued to grow for bollards with shallower foundations, in projects within

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cities and the public realm there has been a rising call for bollards and barriers to be aesthetically pleasing. Products have therefore had to be designed which not only fit the new urban landscape, but still fulfil the key objective of protecting crowded places, protecting assets, and of course protecting people.

I recently attended a meeting at a leading architecture house. Just before I went into the meeting, I heard a shout of, “NO, NO, NO!” It was the chief architect, who had just seen the plans for his new project updated with perimeter security measures, including a set of PAS 68 bollards across the front, each with a 380mm diameter. “I am not putting those things in the front of my new building,” he exploded. “We design some of the most beautiful buildings in the world. Why should we destroy the front of the building with these military-style bollards? Aesthetics is everything!”

As a result of this attitude, I believe the anti-terrorism manufactures in the UK are now trying to achieve and design more architecturally pleasing products, which are more suited for the public realm like shopping centres and sports stadia. It has certainly been a challenge, but with Safetyflex’s innovative spring steel, the company has been able to make PAS 68 bollards with a shallow

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foundation of only 200mm. These have been crash tested as a single bollard, and the beauty of these bollards is that they are only 100mm wide, making them the smallest PAS 68 bollards in the world. This allows the company to be innovative, building PAS 68 planters and street furniture, like bike racks and litter bins. These products have been described as an architect's dream because they are so small; most are the same size as standard bollards and street furniture already in the marketplace.

Such innovative products have become the preferred choice for architects, and are in use at shopping centres, airports, historical buildings and other parts of the critical infrastructure across the country. Safetyflex's products were also used extensively to protect the various sites of the London 2012 Olympic Games, for which the company was key suppliers of PAS 68 anti terrorist bollards and barriers, supplying thousands of bollards around the UK.

Within the last year, the market has changed once again, and the industry needs to adapt to meet the new threats and requirements. Clients such as the MoD and key utility companies are now seeking PAS 68 fence lines as well as ever-shallower PAS 68 bollards. The market is also seeking rapid deployable PAS 68 products, to temporarily increase protection at stadiums, summits and other key sites where athletes, dignitaries and the public may be vulnerable to VBIED attack. Above all, there is steady pressure for these products to be cost-effective,

meaning there is a constant need to innovate to keep the unit price down.

Within the last couple of years we've now seen Europe and the Middle East adopt the PAS 68 British standard for all their security needs, as they believe the UK is at the forefront of innovation for anti-terrorist barriers and systems. For example, Safetyflex has recently won orders in Singapore for some 3,000 PAS 68 bollards, for three separate projects. The company has also recently been awarded a major US patent, which will protect our PAS 68 barrier system in the US. This has led one of the largest US anti-terrorist equipment suppliers to approach Safetyflex barriers to supply their products in the US.

Over the years, the PAS 68 BSI standard has been updated regularly, and we now working with the PAS 68: 2013 edition. This has been devised in conjunction with PAS 69: 2013, which is the guidance for the selection, installation and use of vehicle security barrier systems. Building on these vital national standards, new international standards are also due to come into effect in the coming months, following the publication of two international working agreements: iWA 14-1:2013 Vehicle security barriers part 1, and IWA 14-2:2013 Vehicle security barriers part 2. Leading security industry figures from the US and the UK were brought together to devise these new iWA agreements, and it looks as though they will prove as successful internationally as PAS 68 has in the UK.

The latest PAS 68 rated bollards and blockers can incorporate shallow foundations and a narrow profile

Marcus Gerrard is the Sales Director and co-founder of Safetyflex Barriers, specialising in the design and manufacture of PAS 68 anti-terrorist bollards, barriers and crash fences. The company's innovative products are used to secure governments and private industry sites around the world.