

PRODUCT UPDATE

Protecting Hospital Buildings From Vehicle Crashes and Bombs

Recent incidents of individuals crashing a car or truck into a hospital building, either in anger or by accident, should sound an alarm to the healthcare industry about a dangerous area of security vulnerability. This threat has been recognized and acted upon by the federal government for its buildings since the Oklahoma City bombing of 1995 and by managers of airports, office buildings, hotels, and retail establishments since 9/11. Some examples:

– A 47-year-old disgruntled former patient reportedly came within a few feet of killing or injuring several people when he rammed his Toyota Camry into [Royal Darwin Hospital's](#) main entrance doors at 4 p.m. Officials at the 363-bed acute care hospital in Northern Territory, Australia, were told by a local newspaper that it had received a warning phone call about his intentions. An hour later, he drove the wrong way up a one-way street, sped the car past police and reporters, smashed a wooden security bollard from its foundations and crashed into the hospital's main entryway. Hospital security officers were the first on the scene and held the man until police arrived a minute later.

– In Warwick, RI, a 42-year-old visitor, who had been escorted out of [Kent Memorial Hospital](#) by Security for screaming and cursing, rammed her Jeep Cherokee into the building's mechanical room near the hospital's main entrance. She faces a number of charges including reckless driving and drug possession.

– In Lufkin, TX, a 30-year-old patient, who reportedly had been belligerent while seeking treatment at [Memorial Health System of East Texas](#), drove his pickup truck through a plate glass window next to the emergency room. According to media reports, the man had been escorted out by security personnel after he became agitated with doctors.

– In Bridgeport, CT, a 21-year-old man who had been shot in the face while sitting in his car outside a bar at one a.m., sped to [Bridgeport Hospital](#) and crashed his Nissan Altima into the emergency room entrance.

Fortunately in the above incidents, no patients, visitors, staff, or employees were injured, although damage to the buildings was substantial. But the potential for a disastrous outcome is obvious and the need to keep vehicles as far away from hospital buildings as possible is one that commands attention.

A 'CRASH' COURSE IN SECURITY BOLLARDS

Bollards, which are posts of varying height, thickness, and composition, are the devices most used to provide such protection. Since 9/11 there has been a spike in the development of bollards to meet different security needs, according to [Brad Done](#), Vice President, Sales and Marketing, [Reliance Foundry Co. Ltd.](#), Surrey, British Columbia.

There are two types of bollards on the market, Done reports. "The first is decorative bollards, which are used for a variety of purposes--diverting traffic, pedestrian walkways, beautification of buildings or as decorative covers over ugly steel pipes." Traditionally a European product, used extensively in England and France, decorative bollards can also be found in North America in smaller cities.

"The second type is for security installations," he says. "These can be as simple as a piece of steel pipe in the ground, embedded with concrete. The strength of that will be determined by the diameter of the pipe, the depth within the ground, the amount of foundation around it, and the structure of the pipe itself." There are companies that specialize in taking security to the nth degree, he adds, "from being able to stop tanks from coming into a building to automatic rising anti-ram barriers to stop trucks trying to crash through security gates." Reliance makes decorative bollards which are placed over the top of security bollards.

continued on next page

DETERMINING THE BOLLARD INSTALLATION THAT MEETS YOUR NEEDS

For security applications, a design professional with security expertise should be included in the design team, Done recommends.

Anti-ram resistance is commonly measured using a standard developed by the US Department of State after 9/11, he says. "Once the design threat is determined, resistance needed to stop it can be calculated. Specification of anti-ram perimeter takes into account both the mass and the speed of an approaching attack vehicle. This is called the K-rating. K-4, K-8 and K-12 each refer to the ability to stop a truck of a specific weight and speed, and prevent penetration of the payload more than one meter past the anti-ram barrier."

There are three basic types of bollard mountings: fixed, removable, and operable (retractable or fold-down), Done says. "Fixed bollards can be mounted into existing concrete, or installed in new foundations. Manufactured bollards are frequently designed with their own mounting systems. Stand-alone mountings can be as non-invasive as drilling into existing concrete and anchoring with epoxy or concrete excerpts. Bollards designed to resist impact are usually embedded in concrete several feet deep, if site conditions permit."

A NEW BOLLARD SYSTEM DESIGNED FOR HOSPITAL-TYPE INSTALLATIONS

RSA Protective Technologies, Upland, CA, has announced the introduction of Curb-It™, a factory-manufactured, three-bollard vehicle barrier assembly that's delivered ready-to-install. The goal of the barrier, according to Rick Adler, its president, is to protect people and property from out-of-control drivers. This makes it ideal, he claims, for hospital applications. The single-piece structure bolts directly onto the face of a curb, he says. In extensive testing, he adds, the Curb-It™ vehicle barrier has been shown to stop cars and SUVs weighing up to 5,000 lbs. and traveling up to eight miles per hour. Vehicles typically "bounce back" 10 feet after impact.

"Curb-It™ is attached to the front face of the curb with anchor bolts and one maintenance person can generally

handle the on-site installation in less than an hour with standard tools, the manufacturer claims. No jackhammers, poured concrete, permits, street closures or debris removal are required. Bollards measure 3-feet high and 6-inches in diameter; they stand 4-feet apart. The unit weighs 700 lbs. and carries a one-year factory warranty.

RSA Protective Technologies manufactures perimeter defense systems for government agencies throughout the US and abroad. K12-rated security bollards have been installed at U.S. embassies, federal buildings, airports, rail stations and corporate centers around the world, it reports.

ANTI-RAMBARRIERS VERSUS TRUCK BOMBERS

Since the suicide truck bombing of the US Marine barracks in Beirut, Lebanon, in 1983, which killed 241 US servicemen and 58 French paratroopers, the use of vehicles loaded with explosives has been a favorite weapon of terrorists, both foreign and domestic, to cause death and destruction of US citizens and US-owned property. To combat this threat, many manufacturers of bollards have designed and produced electrically operated barriers of different sizes and shapes. Embedded in the ground, these barriers reportedly rise in a fraction of a second on activation to stop trucks which have crashed entrance gates or other designated check points. They are used as the first line of defense at critical facilities including embassies, nuclear facilities, military bases and corporate headquarters.

"Much of modern security design focuses on the threat of bomb attacks," Brad Done points out. "The most



Street-located Whittington Hospital, North London, UK, has bollards at regular intervals to prevent passing vehicles from accessing the pavement.

continued on next page

significant factor in protecting against explosions is the distance between the detonation and the target. The force of the blast shockwave diminishes as a function of the square of the distance. The more distance that can be placed between the detonation and the protected structure – referred to as standoff distance – the greater the threat that can be resisted, or, conversely, the less blast-resistance needs to be built into the structure. Therefore, creation of a secure perimeter is the first step in the overall design of blast resistance”

“Standoff is valuable architecturally,” he adds, “because it allows a building to be protected without having to look like a bunker. It also has economic impact, because it is frequently less costly to create standoff than to bomb proof the structure itself. Security bollards and similar anti-ram installations are designed and positioned to create standoff by thwarting the delivery of explosives close to the target by a vehicle.”

Where Hospitals Are Most Vulnerable To Bombers

The area where vehicles are allowed to come closest to the hospital is the emergency room ambulance dock. This is the most likely place for a terrorist to drive a stolen or otherwise obtained ambulance without being stopped or deterred, unless ambulances have to be cleared to pass a security gate located at some distance from the dock. This is where anti-ram installations should be considered.

Tony W. York, CHPA, CPP, Senior Vice President, HSS, Denver, CO, and co-author with Russell L. Colling of Hospital and Healthcare Security, 5th Edition, is not aware of any healthcare organization using bollards or anti-ram devices in the ambulance bay area for preventing terrorist type activity. “However,” he says, “we have been using bollards and they have been having a residual effect in protecting the walls and the actual entry points to the facilities themselves. We’ve had great success, even at the ambulance or ambulatory entrance, with bollards, making sure that we would not allow certain levels of penetration. That has become a fairly common safeguard for organizations, especially those that have done any type of renovation or new construction.”

York, a past-president of IAHS, adds that many organizations, especially those in cold weather climates, have built large protected bays where doors to the facility are



Rows of crash-resistant bollards protect entrances, glass areas, and main building of Yuma Regional Medical Center, Yuma, AZ. Reliance Foundry Co. Photo

remote access controlled, and are based on cameras and communications with the emergency department. “I’ve also seen, design-wise, the structuring of ambulance entrance approaches with turns so that drivers can’t go straight at the entrance with any type of speed. It’s not done with terrorism in mind, but it does have a residual effect in that area.”

FOR FURTHER INFORMATION, CONTACT

Brad Done, Vice President, Sales and Marketing, Reliance Foundry Co. Ltd., Unit 207, 6450 - 148 Street, Surrey, BC, Canada V3S-7G7. Ph: 604/592-4323
 Fax: 604/ 590-8875. E-mail: brad@reliance-foundry.com
 Web Site: www.reliance-foundry.com

RSA Protective Technologies, LLC, 1573 Mimosa Court, Upland, CA 91784 Ph: 909/946-0964.
 Fax 909/946-1186. E-mail: radler@rsaprotect.com
 Web Site: www.rsaprotect.com

Two of the leading companies making anti-ram barriers are **Delta Scientific Corp.**, Palmdale, CA (<http://www.deltascientific.com>) and **SecureUSA**, Cumming, GA (www.SecureUSA.net).

Tony W. York, CHPA, CPP, Senior Vice President, HSS, 900 S. Broadway, #100, Denver, CO 80209.
 Ph: 303/603-3101. Fax: 303/282-4202
 Email: tyork@hss-us.com