THE FRONTLINES in the war on terror are highly visible in urban centers throughout the country; streetscapes are becoming militarized with grimy concrete barriers, checkpoints, and machine-gun-toting police officers. Not only is the new paraphernalia an eyesore, but it is also consuming significant amounts of public space.

However, New York City, which undoubtedly remains one of the most appealing targets in the world for terrorists, is actually beginning to look less frightening thanks to security-oriented streetscape projects in two of its most distinctive neighborhoods: Battery Park City and the Financial District. In addition to making security barriers more aesthetically pleasing, Rogers Marvel Architects, PLLC, the lead architecture firm for both projects, developed strategies to literally stop terrorists in their tracks.

Making urban streetscapes secure against terrorists wasn’t an issue for designers prior to 9/11. The architects at Rogers Marvel educated themselves by studying military standards, says Graeme Waiitkien, a principal in New York-based Rock Twelve Securi-

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ty Architecture, a new Rogers Marvel spin-off that specializes in designing architectural elements for streetscape security. Says Waiitkien, “There wasn’t really a precedent for how to incorporate security and urban design.”

Instead of deploying the standard off-the-shelf barriers that are being used throughout the country, many of which were not designed to stop terrorists, Rogers Marvel is custom designing security barriers that can also function as street furniture, sculptural objects, and traditional landscape elements. These objects are not only multipurpose, but they also consume significantly less space than the generic bollards, gigantic planters, and jersey barriers (rectangular cement slabs used for separating lanes of traffic) that were formerly crowding the sidewalks. “What we want to do is put an invisible hand into the security envelope,” says Jonathan Marvel, principal with Rogers Marvel.

Robert Rogers, also a principal with the firm, acknowledges that it costs significantly more to custom design multipurpose security devices than it does to simply install standard-issue barriers such as planters and bollards. But, he argues, spending extra for security barriers that serve other purposes ultimately makes sense because the probability that they will be needed to prevent a terrorist attack is almost zero. “If you spend all this money and all you’re getting is security, then it’s really kind of a waste from an urban design point of view,” Rogers says. “You put a bollard in, and the chance that it does what it’s...
supposed to do is infinitesimal, but if you put in things that add to the streetscape, then you have actually gotten something for your investment.”

Rogers Marvel’s security barriers are built to meet U.S. Department of State standards, the most rigorous federal force resistance standards, and are tested by the U.S. Army Corps of Engineers under a

The most prominent of the custom-designed security devices in the Financial District are bronze-covered concrete objects shaped like rocks, which Rogers Marvel calls NoGos and which were recently featured in the safe design show at New York City’s Museum of Modern Art. The NoGo barriers, which cost from $20,000 to $30,000, are significantly more expensive than the planters ($5,000–$10,000) that they replaced, but the NoGos function as seats and sculpture and can stop a 15,000-pound truck traveling at a high speed (the exact speed cannot be disclosed because of restrictions by the New York City Police Department). In contrast to the long, rectangular jersey barriers and planters that had formed literal walls at the entrances to the Financial District, the NoGos open up the street visually and spatially. The NoGos, many of which are freestanding, are placed in a slightly staggered fashion at intervals in front of intersections. Their shape and dimensions (2 1/2 feet wide, 4 feet long, and 2 1/2 feet high) enable them to block vehicles while permitting significant pedestrian access. Bronze was chosen as an exterior surface because of its durability and because it complements the bronze doorways and trim of the surrounding neoclassical architecture. The NoGos also reflect the heterogeneous appearance of the Financial District’s streetscape. Although the NoGos are made in a mirror image, when they are arranged in a group, their broken, boulderlike surfaces give the illusion that each one is unique.
The limited amount of public space in the crowded Financial District made it challenging to balance security concerns with the need for service vehicles and pedestrians to access the area.

research and development agreement with the firm.

The Financial District and Battery Park City required very different design approaches. The Financial District, a New York City Landmark District, contains some of the most historic architecture in the country: the New York Stock Exchange, Federal Hall, and the former JP Morgan building. Its winding narrow streets are all that is left of New Amsterdam, the Dutch settlement that preceded New York City.

Battery Park City, in contrast, is a modern and planned development built along the Hudson River on landfill that came from the nearby World Trade Center site. It was constructed over a 20-year period from a master plan developed in 1979 by Hanna/Olin in conjunction with two New York architects. Battery Park City is one of the first mixed-use developments in the United States, and it contains one of the world’s most successful park systems.

The security needs are quite different in each neighborhood. Battery Park City has long, wide, boulevard-like streets framed by tall skyscrapers—and ample sidewalks where a truck bomber could build up speed and get relatively close to potential targets. In contrast, because the entire Financial District has been turned into a protected pedestrian zone, the critical areas there are the intersections leading into it.

THE LIMITED AMOUNT of public space in the crowded Financial District made it challenging to balance security concerns with the need for service vehicles and pedestrians to access the area. For the first year after 9/11, design considerations took a backseat to security concerns. The Financial District was turned into a pedestrian-only district, hastily improvised with bulky security devices littering the streetscape. The seven intersections leading into the eight-block area that had made up New Amsterdam were secured with jersey barriers and gigantic planters that hadn’t been crash tested or designed to protect against terrorism. Wall Street was so cluttered with barriers that it had only a six- or seven-foot channel for pedestrians to walk along. At several intersections, pickup trucks loaded with sand were parked in front of openings in the concrete structures. These trucks functioned as movable barriers that could allow entry of delivery vehicles and specially permitted vehicles.

Some of the most invasive and alien post-9/11 security features in the Financial District were the sand-filled pickup trucks. At most intersections the pickups have been replaced with hydraulically operated retractable bollards, which can be lowered into the sidewalk, and metal Delta Barriers, steel plates that in their down position lie flat in the street. They are hinged on one side so they can be raised like a drawbridge to block access. As part of phase two of the Financial District project, Rogers Marvel plans to replace the remaining trucks as well as the Delta Barriers with a less-intrusive device that it calls a Turntable. A Turntable consists of a large, round, movable plate inserted into the street bed and mounted with NoGos. In its closed position, a Turntable mounted with NoGos will block vehicular access at a street entrance, but with the flick of a switch, the NoGo-mounted section of the Turntable swivels around and creates an opening for specially permitted vehicles.
Rogers Marvel decided to reduce the footprint of the security apparatus in the neighborhood with new types of barriers that would complement the area’s historic neoclassical architecture and also enliven the streetscape. “Because the streets are so tight, essentially you are dealing with outdoor rooms,” says Marvel. “Wall Street is like the living room of lower Manhattan—everybody congregates and passes through there—and when you’re designing a room, every inch counts.” One option was to install bollards, which the firm did in several places. But the architects came to view bollards, which function solely as security devices, as having limited possibilities for urban design in the Financial District. In many places, bollards were also imprac-

Another intrusive security feature that had been installed post-9/11 is a black grill fence that restricts pedestrian access in the area immediately in front of the New York Stock Exchange. Rogers Marvel is planning to replace the fence with a rectangular waterfall that runs the full length of the New York Stock Exchange on Broad Street. In addition to being a visually more soothing barrier than a black metal fence, the waterfall will hearken back to the old canal that ran along Broad Street in the days of New Amsterdam.
"Because the streets are so tight [in the Financial District], essentially you are dealing with outdoor rooms.... And when you’re designing a room, every inch counts."

tical. To achieve the terrorist safety criteria required by the New York City Police Department, bollards needed to be threaded deep into the sidewalk, past utilities and other obstructions. For example, to meet the established force-protection criteria, the typical bollard needs a foundation two feet wide and four feet deep.

In contrast to bollards and planters, Rogers Marvel’s security devices address the Financial District’s space constraints both above and below the ground. For example, the NoGos, the relatively heavy and dense boulder-like objects designed by Rogers Marvel, consume significantly less streetscape space than planters. And in many cases, the NoGos, because of their substantial weight (which cannot be revealed because of security restrictions), do not require foundations, as do bollards.

The second phase of the Financial District project is due to be completed in 2007. The estimated cost for the whole project is $35 million.

IN CONTRAST TO the Financial District, the Battery Park City streetscapes project, with an estimated price tag of $28 million, deals with car traffic as well as pedestrian traffic within the protected zone, making it a more typical model for other urban centers in America that are installing security measures to protect against terrorism.

The security features on the streets of Battery Park City, which are designed to slow and regulate traffic, also make the neighborhood more pedestrian friendly. Rogers Marvel’s plan calls for traffic-calming features including traffic neck downs, where streets are tapered, and raised pedestrian crossings. Hardened barriers in front of new lay-by lanes, which allow traffic to pull off the road and stop in front of buildings, and new traffic meridian barriers that divide traffic lanes will also create acute turning angles to further restrict the speed of a terrorist-driven vehicle.

When built, the Freedom Tower, the World Trade Center memorial, will be a striking contrast to Rogers Marvel’s urbanist vision. Critics have denounced the tower’s redesign for its ominous fortress-like features: Its fortified, 200-foot-high, concrete-and-steel, mausoleum-like base with slits for windows was reportedly designed in response to the New York City Police Department’s concerns about terrorism. Security
features are now standard requirements in new construction by many corporations and government institutions. But Rogers Marvel's downtown streetscapes show that good

Rogers Marvel's plan for the Battery Park City project, phase one of which is due to be completed in 2006, involves opening up sidewalks for pedestrians by moving most of the security apparatuses into the streets. The security features on the street are designed to slow vehicles down, allowing the interior layer of security on the sidewalk to be engineered to a lower force-resistance level. The security features on the sidewalk are designed to stop vehicles and will consist of a patented, collapsible, concrete-covered trench that can sustain the weight of a pedestrian but will collapse under the weight of a car traveling at a reduced speed. The trench works in conjunction with a cast glass bench at its border. The bench, which is filled with steel or concrete for force resistance, also serves as seating for pedestrians. In addition, the bench contains LED lights and at night will serve as a way tracker along Vesey Street, which runs the width of Battery Park City, linking the new ferry terminal on the Hudson to the Freedom Tower site three blocks away.
design doesn’t need to be compromised by security concerns and that while we might be living in a more perilous world, our designs for our built environment don’t need to be overwhelmed by our fear of terrorism.

In this segment of the Battery Park City streetscapes project, a collapsible concrete trench is designed to work in conjunction with a glass bench to stop potential truck bombers.

Alex Ulam is a freelance journalist who writes frequently on architecture and design for publications such as Metropolis, Wired, the National Post of Canada, and the New York Observer.

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