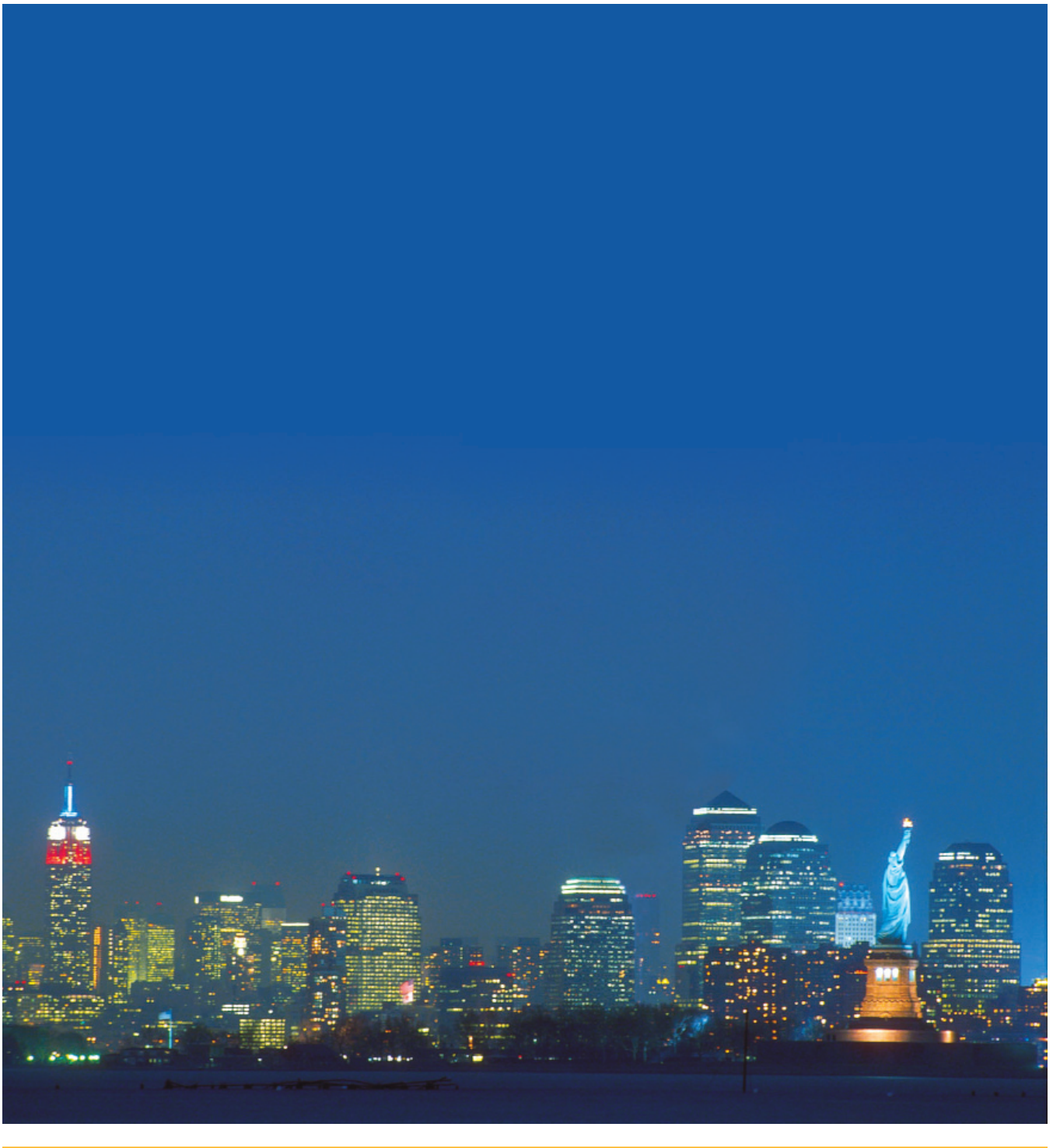


# Risk and Security for New York City Buildings

# ARUP

Report on a Roundtable discussion

September 21, 2004



## Introduction

Through a combination of five expert speakers and group discussions, the following topics were explored:

- **Societal Challenges and Perceptions of Security: Past and Present**
- **Issues for Managers and Designers: Legal, Financial and Regulatory**
- **Incentives for Risk Mitigation: Insurance vs. Regulation**

On September 21, 2004 Arup Risk Consulting organized a roundtable discussion on the effects of terrorism on the New York City real estate industry. The event brought together thirty real estate professionals - regulators, designers, insurers, lawyers, developers, utilities representatives, tenants, and researchers - and engaged them in a dialogue on how terrorism has impacted traditional risk and security issues facing buildings.

Prior to September 11, 2001 (9/11), building codes had evolved to protect occupants and owners from extreme natural and accidental events by requiring various measures intended to increase the resistance of the structure and improve the evacuation of people. In the post-9/11 environment, property managers and tenants in New York City have become acutely aware of the need to protect their buildings against deliberate attacks, such as bomb explosions or the release of harmful chemical agents into the air. Yet there is no agreed upon detailed strategy for long-term protection of New York buildings from terrorist threats.

Collaboration between the public and private sectors is needed to determine what the range of potential threats are, whether government regulation is necessary, and what the most cost-effective solutions for mitigating risk are.

This roundtable was organized to allow diverse stakeholders to share perspectives on these issues.

The Roundtable did not aim to provide final answers to these highly complex issues. It did, however, serve as an opportunity for various stakeholders to share perspectives on the development of approaches to risk management. This report summarizes the key points discussed during the roundtable, and attempts have been made to be as accurate as practicable. A draft copy was sent to attendees for review and comment. Arup thanks each and every participant in the roundtable for contributing their time, thoughts and expertise.

**Gayle Katzman** PE  
**Brian Meacham** PhD PE

## Address - Commissioner Patricia Lancaster, New York City Department of Buildings

We are currently engaged in a war that has no boundaries. Thousands of innocent lives have already been lost. According to Stephen Flynn, a senior fellow in National Security Studies at the Council on Foreign Relations, this country must construct a more resilient society that can withstand another blow such as the one we endured on 9/11. Flynn also states that improving homeland security requires that the government reconsider many of its assumptions and priorities. It also requires a population that acknowledges that security must become everyone's business. As a nation, we must realize that there may never be a complete victory against terrorism, but we can put up a good fight.

The post 9/11 world is very different from the one before. Code officials are confronted with the competing needs enhancing security, while at the same time ensuring that occupants can conduct their daily business and quickly evacuate in an emergency. This new world requires us to find a balance between terrorist threats and the way we construct buildings. We cannot focus on only one at the expense of the other and we cannot compromise safety.

Today's terrorists know the traumatic and crippling effects of attacks on our infrastructure. We cannot forecast what we're "designing against". Architects and engineers cannot design a building to withstand the force of a jet airliner unless we advocate for buildings to be built as fortresses or bunkers and that is not the answer. So, what can we do? We can improve our protections and our resilience to withstand acts of catastrophic terrorism by preventing these attacks and deterring them in the future. This group of professionals gathered to discuss some best practices of how we can improve the strength and backbone of all cities, large and small. This continues to be a work in progress but one with a deep commitment from its stakeholders.

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## Summary of recommendations

Final thoughts from participants on critical issues and insights gained during the roundtable are summarized here. While there was strong agreement on some issues, the list shows that there were also divergent views.

- Standardization of security requirements for buildings can help to reduce litigation and assist in the pricing of insurance premiums. Standardized emergency procedures help ensure predictable human behavior is better addressed in emergency response planning.
- Standardization is difficult because protection levels for buildings depend on threats for each facility, yet threat scenarios, criteria and performance levels cannot be published due to security concerns.
- Best practices for building security features are an alternative to regulation. These might be in a similar format as green building design guidelines. Alternatively, minimum standards for building security features can be established through regulations.
- Global, national, and regional standards can serve as a basis for local standards development. This will help assure consistency of measures and understanding of requirements by owners, managers, designers and tenants.
- Tenant responsibility, education and cohesiveness are important elements of emergency preparation. Use common sense when designing systems, setting procedures, and behaving in emergencies.
- Increase professionalization of security and emergency managers. Ensure funds are available for security upgrades.
- Improve insurance options for terrorism risk. TRIA is a federal underwriting program for terrorism insurance, yet premiums are expensive and the program is not widely used or understood.
- Reward developers, property owners and managers for their use of security technology and risk mitigation upgrades to motivate them to cover the added cost. Insurance premium reduction is an option. There may be other market-place benefits.
- The private sector cannot guarantee the protection of buildings against terrorist threats. Building protection must be balanced by government intervention, such as law enforcement and prevention of terrorist activity on U.S. soil. Better understanding and agreement of an appropriate balance is needed.
- Industry groups can provide important technical guidance. Groups such as the American Society of Civil Engineers (ASCE), the Building Owners' and Managers' Association (BOMA) are involved with the issue of building protection against terrorist threats, and much can be gained from the efforts of these and other industry groups.

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## Roundtable participants

Arup acknowledges the efforts of the featured speakers, including:

**Commissioner Patricia Lancaster**, New York City Department of Buildings; **Patrick Moynihan**, ABC Television and News; **Heidi Lawson**, Debevoise and Plimpton, LLP; **David Grigg**, Marsh USA and **Brian Meacham**, Arup

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**Robert Shapiro**  
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**Wayne Taub**  
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## Societal challenges and perceptions of security

**What are the perceptions of risk within the New York City commercial and residential communities?**

### Changing Threats

Before 9/11, fire, wind, earthquakes and floods were the major concerns for structures. Building codes evolved to protect occupants against these events. For example, California used to experience devastation following earthquakes. In recent years, building engineers' improved understanding of the behavior of buildings and their structural performance during seismic events is reflected in contemporary building codes. Now structural protection against blasts and prevention of airborne agent spread (i.e. chemical, biological or radiological attack) are concerns. Current building codes do not seek to protect against these deliberate attacks.

P. Lancaster considered revising New York City's building code to include different levels of protection for different levels of risk in certain buildings, but decided not to because of concerns over increasing the risk to certain buildings. If building codes regulate

protective measures for different levels of security for various buildings, then those facilities designated as having higher security threats might become even more of a target. Enforcing this type of regulation might make too much information available for potential attackers because designation of security levels would be likely by FOIL-able.

R. Iulo commented on the challenge of mandating physical protection based on perceived threats. Threats are risk-specific and difficult to establish for a facility. He and L. Conlon touched on the idea of best practices, which would be available as a design guide but not required by code.

The roundtable group agreed that risk management is a serious challenge for our time. G. Thompson reminded the group that civilization has solved greater problems in the past. Our technologically advanced society can surely solve the challenge of protection against attacks on our buildings.

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**Have the changes to security been effective?**

**How do we know?**

### Perceptions of Security

Building security was drastically increased in response to the attacks on 9/11. Yet New Yorkers have widely different perceptions of security since then. According to L. Trimboli, forty percent of New York City residents still do not see the need for emergency preparedness. Many people in New York City rely exclusively on government and police for protection against deliberate attacks. While T. McGurl pointed out that this reliance might be misguided, J. Tringali encouraged the group to utilize whatever resources are available, such as the NYPD Joint Terrorism Task Force. Both public and private sectors can contribute to emergency preparedness in significant ways.

As an example of society's changing perception of the importance of risk mitigation, attitudes toward fire and security in commercial properties have been improving. In the past, fire protection was often a low budget

priority and implementation of security systems was an afterthought for new construction and renovation. Through significant effort on the part of some fire safety professionals, this attitude has already started to change. P. Moynihan noted that he has worked hard to break down barriers between ABC Television and the New York City Fire Department. He and others saw the importance of dedicated fire safety people in many buildings.

The tenant perception of risk mitigation is also changing. Prior to 9/11, some tenants disliked security measures because they were not aesthetically pleasing or they were intrusive. Tenants now realize however, that security can no longer be an afterthought in design. In fact, if security is considered at an early stage and at a high level in design, it can be integrated more seamlessly, and its aesthetic disruption and cost can be minimized.

## Societal challenges and perceptions of security

How have approaches to security changed since September 11, 2001 to address these perceptions?

### Changes to Security

R. Shapiro commented that it might be too early to understand exactly which threats we need to defend ourselves against in the future. Some groups of people have begun to plan for events of the magnitude of 9/11, and have not planned for smaller scale events. When the blackout hit New York City in August of 2003 for example, some residents did not have flashlights or emergency preparedness kits, despite the fact that 9/11 occurred less than two years previously. This event proved that people should be prepared for all levels and types of emergency events.

There is also a clear need for tenants to act together and form partnerships for the sake of security. M. Collins talked about communication and leadership on the part of tenants.

Advanced security systems can be established, but no measure is adequate if tenants do not use it properly.

J. Handy advises clients to “be their own security guard”. She explained that when tenants hold a secure front door open for strangers, security measures are bypassed.

J. Walsh observed that no one is giving direction on how best to protect commercial and residential property against deliberate attacks. The real estate community is looking for strong and clear direction on protecting buildings. Due to this lack of direction, the group felt that a near complete mind-set and culture change is needed in the building industry. Many new security-related products are on the market, and vendors of building products are learning to adapt to today's fear of deliberate attacks on buildings.

G. Thompson recommended a book called *America the Vulnerable: How Our Government Is Failing to Protect Us from Terrorism* by Stephen Flynn, which explores the issue of protection in a broader context.

## Issues for managers and designers

How do we best address risk and security requirements for buildings?

Is it the responsibility of the property owners?

Is it the responsibility of the tenants?

### Managers (Developers and Owners)

There are currently no regulations requiring buildings to be protected against terrorist events. Building codes have however, been updated in the areas of fire safety and egress. Recently, recommendations of the World Trade Center Building Code Task Force were enacted to law in New York City, requiring building owners to develop and practice emergency action plans for a broad range of threats.

Although building codes do not yet mandate requirements for managing risk, there are approximately 70 types of matrices available for managers to set priorities for risk reduction. L. Trimboli noted that there is no agreement among experts as to which approach is best. Both managers and designers are using risk management approaches that suit their needs, as standardized methods have not emerged.

This lack of regulation and agreement among experts in the real estate industry regarding risk mitigation can leave property owners in difficult situations. S. Wilking explained for example, that a building owner needs insurance to comply with lender agreements. Yet if a risk assessment reveals structural deficiencies that are not immediately corrected because they are very costly, insurers might raise their prices to unaffordable levels. He assured the group however, that good property managers do what is right for each situation.

D. Kamien noted that in order to significantly improve building or other kind of security and emergency preparedness, owners must define what the constituent components of security are. They should also follow up on their preparedness efforts by assessing the components of security and tracking the remediation efforts on an ongoing basis.

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## Issues for managers and designers

**Who will pay for security upgrades?**

**How much freedom should be given to security managers?**

State-of-the-art fire protection and security systems cost more money than many owners are willing to spend, and most owners see no financial incentive to increase security. J. Titterton asserted that there is a long-term benefit of investing money for risk mitigation, even if it is not clear in the short term.

Both the public and private sector have begun using new security-related products on the market. For example, L. Trimboli noted that New York City is happy with its investment in the new Apple System technology for paging employees. Goldman Sachs also has a successful campus-wide paging system and their managing directors are

becoming fire safety managers, underscoring the importance of this role to the organization.

Con Ed uses card access systems that allow security managers to know at any time who is in their buildings and where the people are located. It has also incorporated other tactics like monthly practice evacuation drills followed by a meeting to critique the success of the drill. Con Ed set up signs in their neighborhoods to direct employees to meeting areas following evacuations.

**What cost-effective options exist to reduce risk and increase security?**

**What is the appropriate use of engineered approaches (like structural hardening)?**

### **Designers (Engineers and Architects)**

D. Grigg felt that engineering firms are not embracing security in design. Firms do not know how best to design for security, and they are concerned about their professional liability insurance if they do attempt to design for extreme events. Design firms are looking for direction because they have no standards to benchmark against. D. Scott talked about the challenge of meeting both code requirements and client needs on design projects.

ASCE and other organizations should take more of a leadership role, which they have started to do. Task forces and committees can be established to set standards and provide direction for engineering design firms.

H. Greenstein discussed the possibility of designing products and systems for emergency use that give greater consideration to human interaction

than do most products available today. Both managers and tenants should be considered in design of emergency systems. P. Moynihan described the challenge of establishing evacuation plans for ABC because of the multiple user types in the network's facilities, and L. Trimboli pointed out that other building users should also be considered. The night cleaning crew for example, might not speak English and is one such user type who cannot be overlooked.

Communication systems are an important component of evacuation design. There is a need to improve communication among evacuees and security managers, particularly the quality of the information communicated. C. Marrion talked about establishing performance objectives for facilities for such design elements as communication and fire protection systems.

**What cost-effective options exist to reduce risk and increase security?**

**Is insurance an effective mechanism to mitigate risk?**

### Insurance

State law regulates minimum insurance coverage. Products and coverage can therefore vary widely across the country.

The Terrorism Risk Insurance Act (TRIA) is a federal government underwriting program established after 9/11. TRIA ensures that private insurers and the federal government share the risk of future losses from terrorism for a three-year period. D. Grigg noted that very few clients are accepting TRIA because most of his clients cannot afford it. The deductible is high and the program has not proven itself to be commercially viable. H. Lawson further described the challenges of obtaining property insurance today, noting that the “devil is in the detail” of the contracts. Although there are problems with TRIA, the industry is concerned with the implications of its possible expiration next year.

Some terrorism coverage is automatic and cannot be excluded from a policy. There are uncertainties and ambiguities in the definition of bearer of the terrorism risk because there is no standardization for protection against terrorist acts yet. There is no clear body of actuarial data to set prices for insuring against terrorist threats.

W. Taub and H. Greenstein contrasted the terrorism insurance dilemma to the problem of health insurance coverage for those at high risk for a certain illness. Most people are eligible for health care. People choose to improve their health through diet and exercise, not because they are motivated by lower insurance costs, but because they want to improve the length and quality of their life. Conversely, improvement measures for buildings are expensive and the group felt that owners need incentives as motivation for upgrades. W. Taub and others recommended a market-driven approach (i.e. financial incentives) to attracting high-end tenants to properties that have added security features at their own expense.

Yet there is no clear indication of how security upgrades are beneficial to a property owner. There is no financial measure of benefit, and insurance premium reduction is not guaranteed. While most of the group agreed that there is a proven long-term benefit to investing money for risk mitigation, it was clear that the benefits are not tangible in the short term.

### Insurance Premiums

The group agreed that the insurance industry is somewhat antiquated and resistant to change. Insurance companies will not likely take the lead in the problem of protecting buildings at risk of attack. H. Lawson however, had success bringing insurance underwriters on site to show off a building’s security features. This effort resulted in lowering premiums for some clients. Underwriters acknowledged that security features enhanced the safety of the property and then lowered the premiums. R. Fuhrman agreed that it is important to educate underwriters and bring them on site early during the process of negotiating insurance coverage.

There is generally no precedent for reducing insurance premiums through increased security provisions. Since 9/11 insurance companies have been unsure how to price terrorism insurance coverage. This situation will worsen when TRIA expires and the federal underwriting is lost.

J. Walsh has observed that tenants’ greatest fears are the cost of insurance and the exposure resulting from exclusion clauses for extreme events. Many in the group felt that premium-reduction is not an adequate motivator for risk reduction in most cases. Standardization through building codes is a stronger motivator for reducing risk for a property.

**How do we best address risk and security requirements for buildings?**

**Should it be through changes to the building codes?**

### **Standardization Through Building Codes**

There is no standardization in building codes for property security yet. Insurers are looking to regulation as a way to translate security features into measurably lowered risk.

Part of the group felt that standardization through building codes is a stronger motivator for risk reduction than insurance premium savings. Standardization could be achieved through added measures in building codes to protect against explosions and airborne agent attacks, and might include structural hardening and chemical filters at air intakes. E. Grillo felt that standardization helps establish 'reasonable' measures, and D. White concurred that minimum standards help developers make decisions on spending for building projects.

Reference standards are already available from various sources like FM Global. S. Wilking noted that a singular standard is needed to govern (1) physical design and business continuity, and (2) human elements such as familiarity with security and emergency systems.

P. Lancaster noted that the New York City Department of Buildings (DOB) is working on regulations for protection against terrorist attacks. Currently there are more than 400 specialists acting in an advisory capacity on 13 technical committees and 72 panels set up by the DOB. P. Lancaster is looking for more people to serve in cross-disciplinary roles, interacting with the various engineering specialists.

If security is regulated, there is a risk that well-intentioned security measures will be counter-productive in some situations. T. McGurl gave an example of a historic preservation initiative that reduced security in the area surrounding Temple Emanuel on the Upper East Side. New York City Landmarks Commission forced the removal of cameras from a historic building. This act met historic preservation requirements but eliminated a security measure.

A timeline for regulation of security features is critical for New York City security planning. If requirements are too onerous, the market will react negatively. S. Wilking noted the possibility of negative consequences for the property owners if groups push requirements too far.

Insurance carriers can have a higher comfort level if property protection against attacks is regulated, noted J. Titterton. Standardization leads to higher levels of control, which helps insurance brokers put together competitive packages that take into account risk mitigation efforts. Security components, like added perimeter protection such as bollards, are now subjectively treated by insurance companies. This means that each insurance package treats the added bollards differently. Standardization will provide minimum requirements for protection. For instance, Local Law 5 governs safety requirements in certain office buildings, effectively covering approximately 70% of emergency events.

### **Standardization of Emergency Procedures**

Building owners and managers are also looking for guidance for emergency evacuation plans. Yet it is difficult to enforce and train site-specific evacuation and emergency procedures. Twenty-one regulations in Local Law 26 enforce emergency evacuation measures recommended by the World Trade Center Building Code Task Forces from March 2002. Although Local Law 26 is not always clear, the group agreed that it is helpful.

A benefit of standardization of emergency procedures is the universal response of building occupants. If emergency preparedness is site-specific and not standardized, visitors to a building will not know how to respond. Currently, fire drills and alarms can even be unclear for daily building inhabitants. P. Moynihan noted that standardization and upgrades of fire alarms and egress procedures have alleviated many problems at ABC.

The human element is important and not always considered in emergency protection. P. Moynihan stated that systems are only as good as the people who manage and use them. He described egress situations in which people evacuated to the roof because they were not sure what to do, and in which everyone would leave when the fire safety directory sounded an inquiry tone that was simply meant to collect information. Improvements have already been made at ABC.

## Next steps

The September 2004 roundtable was a success in that it brought together people from diverse sides of the real estate industry and engaged them in a common discussion on the unique challenges facing New York City properties since 9/11. Arup hopes to continue facilitating this discussion and participating in efforts to resolve the issues raised at the roundtable.

Specifically, we aim to do the following:

- Work with the New York City DOB technical committees and panels to study options for regulating protection against terrorist attacks, specifically through the security advisory committee. This is a challenging effort, as the roundtable shed light on both the benefits of standardization for many in the group, and also the potential drawbacks of regulation such as making threat levels for buildings public information, or enforcing costly measures within a short time frame.
- Participate in industry and educational groups that address protection of buildings against deliberate attacks. Engineering groups like the American Society of Civil Engineers (ASCE), and industry organizations like Building Owners and Managers Association (BOMA), are already starting to play an important role in this effort. ASCE established a blast advisory committee and BOMA recently held sessions on insurance, Local Law 26 and other security issues at its 2004 conference and trade show in New York City. Academic institutions like New York University and John Jay College offer programs in business continuity and homeland security.
- Interact with the insurance industry to encourage recognition of risk-reduction measures in premium pricing.
- Interact with the architectural and engineering design communities to encourage consideration of a broad range of physical risk-reduction measures in both newly constructed and renovated properties. For new construction, security measures should be planned early in the design process when their cost and aesthetic implications can be minimized. For renovation projects, cost-benefit analyses can help prioritize features to be upgraded.
- Hold future events that bring together diverse stakeholders and raise awareness about risk and security issues for properties, with a focus on New York City.

## Conclusions

A roundtable discussion brought together thirty professionals in the New York City real estate community to discuss the effects of terrorism on their business activities. While building codes have evolved over the years to protect life safety in buildings against accidental and natural hazards, it is not yet clear how best to protect people, property and operations in buildings against terrorist attacks.

The roundtable was organized to allow diverse stakeholders an opportunity to share perspectives on this complex issue. The discussion focused on three main topics:

- Societal Challenges and Perceptions of Security
- Issues for Managers and Designers
- Insurance and Regulatory Incentives for Risk Mitigation

The roundtable resulted in a lively discussion. It served as a unique opportunity for various representatives of the public and private sectors to discuss opinions and challenges regarding risk and security for buildings.

To build on the success of the September 2004 roundtable, Arup hopes to hold future events that address risk and security issues. Future roundtables might focus on infrastructure, or specific market segments within the real estate industry (i.e. hotels). Other players like industry groups, insurance and designers can make important contributions to the effort.



Arup Risk Consulting is a business unit within Arup, a global consulting and engineering design firm with 8 offices in North America and nearly 70 offices in 30 countries worldwide. In response to the IRA terrorist bombings in London in the 1970s and 1980s, Arup developed risk and security consulting services and design expertise to assist a wide range of private sector and government clients in understanding and addressing terrorist threats and mitigation, from physical and electronic security to blast-resilient and fire safe buildings to emergency egress and response planning. Today Arup in the Americas applies its risk, security, fire and blast consulting and design expertise on such projects as the design of the \$750 million Fulton Street Transit Center in Lower Manhattan, assessment of various Federal Reserve Bank properties, and to the risk, security, fire and life safety analyses of highrise and other commercial properties. Arup has had a presence in New York City since the 1980s.

*This report is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.*

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