BRAVE NEW WORLD

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Society's expectations have changed. Our perception of big, strong buildings protecting us and lasting for hundreds of years is over. Our valuation of democracy has been challenged and our definition of freedom has been altered. We are voluntarily (and without complaining, even as New Yorkers) allowing authorities to question us and limit us.

I would like to talk a little about the ways that the new ideology has affected the built environment, tell you about our vast new code developments and end with some comments about the Building Industry's role in the Brave New Free United States of the future.

With regard to building engineering and design, 9-11 has changed everything. At least in New York City and other urban environments. Developers, building owners, commercial tenants, and even employees, are demanding safer buildings. In the days immediately following, I think New Yorkers would have preferred concrete bunkers to go to work in. The magnitude of the affront was too great as to be unimaginable. The United States was changed forever.

New potential threats are identified from terrorist groups every day, which has caused the design community to react. These threats affect the architecture, by forcing us to clearly define the public-private boundaries and by limiting permeability. Coupled with the necessity of ID cards and security checkpoints, these changes now restrict our freedom of movement and freedom of anonymity. As noted security expert George Figliolia of the Builder's Group says:

> "Many locations have been made more secure with relatively simple techniques that raise the level of visible security. Property managers and buildings owners are displaying to the world that security measures have been installed in their buildings in an effort to prevent trouble before it ever occurs. Security systems will always be more effective when they are visible. Tenants and legitimate visitors are put at ease when they know that the building's staff is alert and aware, and people who might be a danger will be deterred. Visible security measures include creating lobbies that are well lighted, and installing security video cameras and monitors in plain sight of anyone entering the building. In addition, all entrances are being guarded by professional security staff in uniforms, and reception desks are positioned so that no one can escape the scrutiny of security staff. Enhanced security, however, goes beyond hiring more security guards and installing video cameras. While visible security can be a very effective deterrent, many real estate professionals and business executives have come to recognize the need for more comprehensive measures. The terrorist attacks have taught Internet-related and data and information firms the importance of protecting their buildings and the data they handle. A number of companies have enhanced normal audio/visual surveillance and security personnel with measures such as high-tech access systems, turnstiles and mantraps to limit access to critical areas without authorization. Property managers and owners seeking to protect more critical buildings, tenants, and systems are turning to more complicated security enhancements. These include installing fire- and blast-resistant doors and bullet- and shatter-resistant glass, which in turn may require reinforced doorframes and window frames. Other companies have hardened building mechanical systems, and added redundant power and communications systems to ensure that critical systems remain functional in case of a threat. Some apartment

properties have had safe rooms constructed, with reinforced walls and doors, medical supplies, food and water, and even air tanks to create an area in which residential can safety ride out danger."

At the NYC Department of Buildings, we have removed from public access hundreds of buildings from a list prepared by the NYPD counter-terrorism unit. This, of course, runs counter to the Freedom of Information Act.

These threats also affect structural design, bringing into the mix issues such as blast-resistance and progressive collapse. And also mechanical designs, to handle potential contaminates introduced into ventilation systems by terrorists.

After 9-11, New York City Mayor Michael Bloomberg appointed a task force to review the Trade Center collapse, and see what lessons could be learned, and applied, to the Building Code with respect to new and existing high rise office buildings.

The Task Force gathered input from other government entities, professional design and engineering societies, the construction industry, private real estate owners associations, private and academic experts, and individuals directly affected by the disaster. Inspection reports, news articles, research reports and, in some cases, empirical test results were also reviewed. A critical source of information regarding the events of September 11th was the FEMA World Trade Center Building Performance Study Report (BPS Report). Its conclusions point to several areas in our current standards and code requirements that may require modification.

Based on the above sources, issues were presented to the Executive Committee and Working Groups for deliberation. Working Groups examined the study issues and formulated both general recommendations and specific proposals for Building Code changes where they were deemed appropriate given the amount of technical information available.

The Task Force diligently worked to identify and differentiate where information already exists, where it is currently being developed, and where additional study is required to adequately assess existing building and safety standards and requirements. The National Building and Fire Safety Investigation of the World Trade Center Disaster by the National Institute of Standards and Technology (NIST) will be a critical component of the on-going efforts to update standards, requirements and procedures.

The Task Force recommendations fall into four main areas: evacuations and egress, fire protection, structural strength and mechanical systems. They are:

World Trade Center Building Code Task Force Recommendations:

1. Publish structural design guidelines for optimal applications to enhance robustness and resistance to progressive collapse.
2. Prohibit the use of open web bar trusses in the new commercial high-rise construction over 75 feet in height, pending the development of an appropriate standard recommended by NIST.
3. Encourage use of available impact resistant materials in the construction of stair and elevator shaft enclosures until appropriate standards can be developed.
4. Work with the Department of City planning to exempt floor area of stairwells above minimum requirements from zoning Floor Area Ratio (FAR) calculations to encourage the inclusion of more stairwells in the buildings.
5. Prohibit the use of scissors stairs in high-rise commercial buildings with a floor plate of over 10,000 square feet.

6. Improve marking of the egress path, doors and stairs with photo-luminescent materials and retrofit existing signs with either battery or generator backup power.
7. Mandate a full building evacuation plan for non-fire related events.
8. Work with the Department of City Planing to exclude floor area of "fire towers" from Floor Area Ratio (FAR) calculations to encourage their use.
9. Mandate protected vestibules at elevator lobbies in newly constructed occupancy group E building g greater than 75 feet.
10. Require controlled inspections to ensure that fireproofing is fully intact on all structural building members exposed by subsequent renovations to ensure continued compliance with applicable code requirements.
11. Require all high-rise commercial buildings over 100 feet without automatic sprinkler protection to install a sprinkler system throughout the building with 15 years.
12. Require all occupancy group E buildings to maintain a Building information Card (BIC) listing a building's vital features.
13. Enhance Fire Department emergency response communications in high rise commercial buildings.
14. Provide additional training for Fire Safety Directors.
15. Limit diameter of fuel oil transfer piping in systems using day tanks.
16. Implement standards for piping that is utilized to distribute fuel oil to equipment without the use of a day tank.
17. Exclude floor drains for elevators vestibule and shafts from being counted as fixtures in calculating normal waste water pipe capacity.
18. Require air intakes in all new construction to be located at least 20' above grade and away from exhaust discharges or off street loading bays.
19. Require controlled inspections of HVAC fire dampers in newly constructed occupancy group E buildings.
20. Wait for the recommendation of Mayoral Commission on adoption of national model code and incorporate Task Force recommendations into any locally specific modifications.
21. Encourage buildings within NYC geographic boundaries and subject to other jurisdictional authority to comply with NYC Building Code through collaborative agreements.

So the task force did not recommend bunkers, but sensible improvements such as locating air intakes above street level to avoid bio-chem attacks through the ventilation systems, mandating smoke vestibules around elevator openings, and recommending shafts for stairs and elevators be made of impact resistant materials.

I should perhaps back-up a little and describe for you the state of the Building Code in New York City. This will come as no surprise to those of you that practice in New York, but the city's Building Code is, currently, prescriptive -- very prescriptive.

The last major overhaul of the city's Building Code was in 1968, which in fact carried over many of the older provisions from the prior 1938 code. (It was first adopted in 1850.) So we've ended up with many prescriptive anachronisms, like a design limit on concrete compressive strength of 3000 psi.

The recent task force has made us think through our prescriptions in a whole different way - and to assess what level of safety and security is necessary for a minimum standard of construction.

Codes, after all, set forth only minimums. If I were to design an embassy, you can be sure I'd far exceed them. But for
standard high rise construction, the economics do not support designing every building to withstand the impact of a fuel-laden jet liner - because we cannot design each building to be a bunker.

In the private sector, performance-based analyses are now being used to exceed minimums in buildings that are deemed to be at higher risk. Take for instance the new 7 World Trade Center, which by the way was not one of the twin towers. It is the site of an adjacent high rise building that collapsed hours after the attack due to fire, perhaps from diesel fuel. For the new 7 World Trade Center, the designers have conducted complex egress modeling which, in this particular building, suggested wider stairwells than those called for in the New York City Building Code.

Historically, the most significant changes in safety standards have come as a result of a disaster or economic hardship. The shortcomings of this reactive nature of code development emphasizes the need for a proactive method of code development that can quickly address emerging safety and economic concerns in a rapidly changing economic landscape.

In addition to implementing the important recommendations of the World Trade Center Building Code Task Force, you will be happy to hear New York City has more recently begun the process of overhauling our antiquated building code. The plan is to adopt a new format -- that of the International Building Code or IBC, with amendments relating to the particular needs of a city as densely populated as New York. We have approximately 300 private sector professionals in 13 technical committees working together with the Department on this large effort. And the product may be a building code that is easier to use and may permit designers the flexibility to design key features on performance-based models.

The Department of Buildings is also aggressively pursuing new methods and concepts designed to reduce processing time necessary to review and approve applications for construction. The Department intends to ensure public safety while streamlining procedures and providing the public with easier access to information.

Today, the Department of Buildings continues to update its Code and recently made available on the web a consolidated version of technical updates. In addition to the Department's efforts in keeping the Building Code's technical standards up-to-date, the Department has implemented a series of initiatives designed to improve agency-wide operations through the efficient interpretation and implementation of Building Code requirements. Some of these initiatives include: E-filing (for subsequent submissions), E-filing of OP-38 forms, Improved Professional Certification Procedures, Emergency Response Procedures, Fee Estimation and Pre-filing, Indexing and Search Capability for Memos and PPNs, Hazardous Violation Sweeps and Building Code search capabilities for Plan Examination staff.

New York City is not the only metropolitan area making changes, upgrading and thinking about security. American society, especially in urban areas, has changed forever, and building design and construction is adapting to these changes.

Designers must no longer consider buildings as a collection of discrete parts, but as a whole, integrating all the systems into a larger plan which includes all aspects of the design, construction and post-construction operations. In some ways we are not facing up to this yet, but in some ways it has strengthened our backbone and resolve.

Designers and constructors have always had the responsibility to protect public safety, as have Buildings Departments nationwide. Now that sacred trust has become ever more important because the "public" is at greater risk. The overwhelming response to 9-11 nationwide showed a solidarity that was not present before. My staff, the staff of the much maligned New York City Department of Buildings showed unbelievable bravery climbing darkened stairwells searching for victims. The design, construction and real estate industry in New York City worked together in an unprecedented way – and are continuing on the IBC. There is a new societal expectation that building industry professionals will make buildings safer, will protect the public. We need to be very clear with ourselves about our commitment to America and its values, and be very, very clear with the public how exactly we are going to do that. We have not traditionally united to do that. This is an opportunity and a challenge and is unique. I urge you to action to let your constituents know what performance based codes mean. We are a great industry with a lot more to contribute that we are ever given credit for. I urge you to let the public know we are doing the best to protect them. I urge each of you to think of yourselves as an emissary from our industry to the world at large and to show them that we are knowledgeable, capable and concerned.