

A Catalog of Responses to September 11

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On September 11, 2001, life as we knew it changed when a terrorist attack took the lives of thousands with the hijacking of four airplanes. Two of those planes were used to destroy the World Trade Center's Twin Towers. Many changes have taken place since September 11. The events of September 11 have had an impact on the US office market. This paper will focus on changes to corporate real estate strategic planning and changes to urban high-rise office buildings that have emerged as a response to September 11.

Corporate strategy changes that will be discussed will focus on decisions made with respect to the geographic location of human capital, new security measures taken, and business continuity strategies which focus on changes to data storage practices. Changes to physical characteristics of high-rise office buildings will be discussed, emphasizing the changes taking place in the future design and construction of buildings due to architectural, structural, and technological changes and changes in the management and operation of buildings. First we will take a look at the overall office market post September 11 and then will focus on the specific changes that have taken place since that time.

Office Market Overview Post September 11

It is important to look at the overall office market post September 11 to understand what the current situation is and whether or not a direct impact from September 11 can be determined to have affected the US office market. In general, initial studies claimed that September 11 would have a major impact on the office market, but it appears that it has not been the case. Instead, the downturn of the economy is to be blamed for the status of the office market.

The events of September 11 definitely affected the office market in lower Manhattan because of the destruction and damage to over 30 million square feet of office space. A Society of Industrial & Office Realtors® (SIOR) study indicates that for the most part, tenants in lower Manhattan evenly chose one of three main relocation options immediately following September 11. Approximately one-third of the demand was covered by excess space available for sublease by existing tenants elsewhere in Manhattan or in New Jersey, approximately one-third was accommodated by new long-term leases primarily in the midtown Manhattan market, and the remaining third was temporarily housed in hotels or other offices spaces until the damaged buildings became usable again. (SIOR 2002) The immediate need to accommodate misplaced businesses decreased the vacancy

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rate in New York City, but within two months of the tragedy the vacancy rates rose to 9.1% from a vacancy rate of 8% on September 11. Tenants required less space and market rents fell as a result of the economic slowdown. (WSJ, 1/2/02)

As mentioned, the economic slump, not the events of September 11, has caused a decrease in jobs and hence a decrease in space needs for companies. Office products are responsive to employment gains or losses and have thus been most severely impacted by the economic downturn. By the fall of 2002 there were still 1.6 million less jobs than at the March 2001 peak (Reis).

While there have been seven consecutive quarters of negative absorption in the office market, the absorption rate has improved for four consecutive quarters to 5.2 million square feet at the end of the third quarter of 2002. Reis, Inc. projects the end of negative absorption in the fourth quarter 2002, partially in response to the slower pace of sublet space re-entering the market (Reis). Below are some supply and demand trends from Reis, Inc. to give an overview of the office market:

- At 15.7%, the office vacancy rate in Q3 2002 was 820 basis points above its low of 7.5% in the 3rd quarter of 2000.
- Asking rents fell by 1.1% in the third quarter of 2002; effective rents, due to the higher value of concessions, fell by 1.5%.
- Of the top 50 metropolitan markets, 24 recorded negative absorption (net loss in occupied space) in the 3rd quarter of 2002, 35 had rising vacancy rates and 31 posted declines in asking rents.
- By the end of 2003, 53.5 million square feet will be delivered, down from 2002's 66.8 million, exceeding net absorption of 31.6 million and pushing the vacancy rate to 16.5%.
- Effective rents are projected to fall another 0.9% in the 4th quarter of 2002, followed by a 0.5% decline in 2003. Modest, sub-inflation rent growth is expected to resume in 2004.

The Reis research shows that the current state of the office market has been caused by a slow economy and is not a direct result of the events of September 11. The initial presumptions that businesses would move out of the Central Business Districts (CBD) and into the suburban office markets did not occur. A study by Jones Lang LaSalle states that high-rise office buildings in CBD's are still important to tenants due to the proximity to clients, service providers, financial institutions and government bodies; the access to a skilled labor force and to convenient transportation; and the value of a

nationally recognized address. Tenants are also still using space in trophy buildings. Even if the events of September 11 cannot be directly related to the overall status of the US urban high-rise office market, these events have impacted how companies are planning their corporate strategies and have produced changes to physical characteristics of high-rises.

Corporate Strategy Changes Post September 11

According to a Jones Lang LaSalle survey, the top three concerns of companies post September 11 are 1) Security and Safety, 2) Employee Attraction and Retention, 3) Corporate Strategy on Space. The following statistics were derived from the survey:

- 85% of those surveyed made changes to their overall corporate strategies
- 70% said that perceived safety is critical to employees
- 85% of companies noted the importance of the ability to recover after a disaster
- Less than 4% said they would change leasing high-rise or downtown office spaces.

Changes being taken in the corporate world post September 11 include an increase of visible security measures, new geographic strategy planning, the focus on data backup sites and practices, and the hiring of evacuation analysts.

Security Changes

Since September 11, companies have strengthened existing security systems and procedures. The most widely implemented security change that has taken place is the increase of visible entryway security. Visible security measures have taken the form of security guards, security cameras, access card systems, ID badges, X-ray machines, and garage security. The implementation of these security measures is critical to the users of the space, because the increased visible entryway security gives the perception of a safer building. Perception of a safer work place has become important in attracting and retaining employees. (Jones Lang LaSalle, 2002)

Besides visible entryway security, other security measures have also been enforced. Vendor check-in and identification became mandatory and companies began requiring vendors to conduct employee background checks. (BOMA/ULI) Background checks of all employees became more prevalent after September 11. Companies will no longer be as lax in screening employees.

Security issues have begun to play a part in corporate real estate financial decisions as well as leasing and ownership decisions. Clearly, the amount of control over security that one would have as a tenant versus as an owner can impact leasing or buying decisions. (Jones Lang LaSalle, 2002) Enhanced security systems in new buildings could be attractive to owners or prospective tenants, giving the buildings with such features a marketing edge.

Continuity of Business Concerns Reinforced as a Result of September 11

The desire to make sure that business is not interrupted in the event of a large natural disaster or a terrorist attack has led the corporate world to focus on the issue of business continuity. A White Paper produced by The Sageza Group, Inc. in March 2002 identifies the following concepts as key lessons learned concerning business practices that are essential for maintaining business continuity while recovering from a disaster.

- Companies should automate the replication and recovery processes for rapid restart.
- Duplicate and disperse both data and people for business continuity.
- Flexibility, imagination, and the willingness to search out unconventional solutions is a key to success.
- Empower staff to make necessary decisions to speed recovery.

Companies have previously highly regarded the importance of business continuity capabilities, but the events of September 11 increased the urgency of such continuity procedures. Geographic location strategies and data backup strategies are the main ways of ensuring the continuity of business in the case of a disaster.

Geographic Strategies

Corporate strategy views with respect to geographic location and dispersion are inconsistent. Some companies are deciding to use geographic dispersal of operations as a corporate strategy and others are doing the opposite by consolidating sites. Jones Lang LaSalle surveyed over 50 of their largest corporate clients and found that 24 percent of those corporate real estate executives said that they are consolidating sites so as not to separate employees from management and as a way of reducing real estate expenses. On the other hand, greater geographic dispersal of operations was stated as a planned change by 28 percent of those surveyed in order to disperse and duplicate human capital resources.

A recent article in Crain's New York Business explains that large Wall Street financial

institutions are under pressure from federal regulators to relocate employees who are responsible for the critical “clearing” operations (securities clearing is the process of swapping money, stocks or bonds after firms have decided to make a trade) to locations as far away as Florida. The purpose for these pressures is so that these large Wall Street financial companies can duplicate their facilities that would be relied upon in the event of another catastrophic event. The proposed regulations are expected to be finalized in March 2003 and could require Wall Street firms to set up staffed backup offices more than 200 miles from Manhattan within 18 months of adoption. Bank of New York (which was one of the hardest hit by the World Trade Center collapse and which clears about 50% of all trades in the trillion-dollar government debt market) has already started moving 80 positions to space just outside of Orlando, Florida. Morgan Stanley (the largest tenant in the World Trade Center) has signed a deal to move 150 jobs to Baltimore, Maryland. J.P. Morgan Chase is looking to move some of its clearing division to Tampa where they already occupy space. Other companies are also looking into decentralizing their operations. The transfer of these and many more securities processing jobs to other locations could damage the economy of New York City and New York State. (Crain’s New York Business, December 9-15, 2002)

Data Backup Changes

Before September 11, companies did have backup procedures and disaster plans in place; however, most plans only planned for an event (i.e. fire) that would affect a single building. Companies were not prepared for an event the size and scope of September 11 that affected a large geographic region. Business continuity planning had not fully taken into account the potential for wide-area disasters and for the major loss or inaccessibility of critical staff (Securities & Exchange Commission, February 2002). September 11 has caused companies to re-examine their current plans and to make future plans based upon extreme worst-case scenarios. Most data backup practices are not new, but companies are increasing the value and priority they place on making sure sufficient data backup systems are implemented. Research by META Group shows that over 30% of companies that suffer a catastrophic disaster (i.e. fire, flood, earthquake) never reopen their doors for business and an additional 29% of businesses close their doors within two years (Enterprise Storage Forum, October 30, 2002).

The scope of the September 11 disaster affected the response time, efficiency, and ability of data backup centers to restore data for companies. Telecommunication outages caused by the damage to lower Manhattan proved to be a significant obstacle. Data storage centers were not large enough to accommodate all the displaced customers. However, individuals and companies rallied together to make space for employees in order to get companies up and running again. Due to the amount of data recovery

necessary, it took some companies longer than expected to get their businesses operational. The U.S. equity markets closed for four days and most bond trading, including government securities trading, halted for two days (SEC, February 2002). Rapid restart practices should be the focus in business continuity planning.

Most large companies are now using data “mirroring” or remote real-time transaction logging technologies, which means that transactions are transmitted immediately to another site (SEC, February 2002). Traditional daily or weekly onsite and offsite backup systems and vault systems are not sufficient to insure business continuity. Disk-based replication technologies are better than tape-based backup processes in restoring business processes in an automated, synchronized and timely manner. Using synchronized mirrored data centers that store data in real-time gives the best protection against data loss. Asynchronous backup processes are transaction latencies of two to fifteen minutes that occur at distances over 400 miles. (The Sageza Group, 2002) Dual mirrored data centers with dual power grids that are located in different geographic sites and multiple redundant telecommunications circuits allow for the most reliable backup practices. Such remote data centers allow companies to geographically separate their business data from their physical location. Placement of data centers has become a foremost concern since September 11. Companies are looking at placing data centers much further away than before (i.e. from 10-15 miles away to over 100 miles away). (Enterprise Storage Forum, October 2002)

Regular testing of backup systems is important in order to avoid system failures in the case of a disaster and a false sense of security. (Jamiatis, December 2001) Testing of business continuity plans and backup systems helped on September 11 in locating and communicating with staff during the initial hours of the crises and allowed quick decisions on key financial and operational issues (SEC, February 2002).

Since September 11 there has been an overwhelming increase in customer interest for storage networks. Even mid-tier companies seem to have IT budgets available now for backup and business continuity practices (Noblett, December 2001).

Technology Versus Travel

Immediately following September 11, companies relied on teleconferencing and videoconferencing instead of travel. (BOMA/ULI) With the decentralization of employees, companies are continuing to increase teleconferencing and videoconferencing capabilities to encourage collaboration.

As discussed, the events of September 11 have affected how corporate America is formulating corporate strategies relating to real estate. Heightened security systems and procedures, geographical dispersal or consolidation, and data backup system implementation and testing are essential in creating a business continuity plan that will protect companies and their core businesses in the event of a major disaster. In order to realize the extent of the effects of September 11 on the real estate industry, it is important to also recognize specific structural, design, and technological changes being made to high-rise office buildings and what changes have occurred in the managing and operating of office buildings since September 11.

Physical Changes to High-Rise Office Buildings Post September 11

Structural and architectural changes are being made in order to make buildings even safer for occupants. Technological improvements are intended to facilitate the evacuation process in the event of a disaster. In addition to physical changes to buildings, managing and operating high-rise office buildings has become more intense as a result of changes made to buildings since September 11.

Structural Changes

Bill Baker, Partner, SOM Structural & Civil Engineering, one of the core structural investigators of the WTC, states that there has never been a collapse of a steel building before 9/11 due to fire and that people should not over-react about the structural integrity of steel buildings. However, structural improvements can be made to steel buildings in order to make them stronger. For a cost of about \$1 per square-foot, reinforcing trusses can be used to allow a building to remain standing even if corner-supporting columns were destroyed. Concrete-encased steel columns and improved interior fireproofing can be used in order to delay the melting of structural columns and to increase protection for structural components during a fire. Baker states that structures can be built too strong, which would cause more damage during a disaster than if they were designed with a progressive collapse structure in mind. Regardless of a building's structural design, it is critical that the Fire Department and other emergency response personnel know whether or not a building is designed to collapse.

Elevator shafts and emergency elevators designated for firefighters' use during an emergency and pressurized stairwells located within a building's concrete core are other structural design changes being incorporated into new construction. A fireproof, blast-proof elevator for use by firefighters is not a new idea, but it may start to receive more attention after the accounts from World Trade Center survivors' saying that they had encountered many exhausted firefighters who were on their way up the stairs to make rescues. (Dolan)

“Areas of refuge” are being explored as a way of protecting some building occupants in emergency situations. These areas are particularly beneficial for individuals who are handicapped, injured, or in poor physical condition and for whom it would be difficult to quickly and easily evacuate the building. These areas could be located approximately every 15 floors and are constructed of high heat resistant concrete with ventilation systems that can keep the air smoke free. These refuge areas could be connected to pressurized stairwells in the event that an escape is needed. (Dolan)

Architectural Changes

Evacuation route specifics and egress time analyses are becoming important architectural design issues. New construction designs include staircases that are larger than building code requirements so that two people at a time can walk down the stairs in order to decrease evacuation times. Some staircase designs include a safe space for people who cannot move easily to get out of harms way or out of the way of responders on their way up the staircase.

The layout of entrances, loading docks, and mailrooms are specific design issues that are being changed in the interest of heightened security. The positioning of the main lobby with respect to the street and other environmental conditions will be a consideration in the design of new buildings. The location of all entrances becomes important in implementing heightened security procedures. The role of designing for standoff distance is taking on new urgency. Curbs, bollards, benches, flag poles, and bird baths are being anchored deep into the ground to be used as barriers. Such barriers protect against automobile related impacts and explosions.

Other design issues related directly to insuring the security of the building include using curtain walls and covering a building’s concrete facade with steel plating to deflect high-speed impacts. Location of the emergency command center on a floor that is less vulnerable to car bombs or package bombs is an important consideration when designing a building. Loss of the command center results in the inability to communicate effectively between the occupants and the outside world. (Dolan)

T.J. Gottesdiener, AIA, Managing Partner, Skidmore, Owings & Merrill LLP, believes there will be less reliability on code requirements and more of a focus on good design and good buildings.

Technologically Superior Changes

Daniel Nall, AIA, PE, Senior Vice President, Director of Advanced Technology, Flack+Kurtz Inc., states that many buildings’ safety systems have been upgraded since September 11, and they are being used in order to detect threats, notify building occupants, and support responders more effectively. For the most part, these technologies are not new, but are now being implemented more widely and intelligently.

Redundant connectivity is now being used more often in order to better detect threats and is especially important if one of the threat detection devices is not working appropriately due to malfunction or destruction. A redundant notification system could include wireless fire alarms placed in multiple locations on one floor that are independently connected to emergency command centers (Dolan). Notification to building occupants through the use of technology is one of the most important components of an effective response plan.

In addition, the technological advances and increased requirements in sprinkler systems, emergency power, and smoke controls are vital in saving lives and preventing damage. Working sprinklers are the single most important system in a fire emergency. High-tech sprinklers that emit a mist to extinguish fires while not damaging sensitive equipment are becoming more popular. These technological advances give support to responders so that they can be notified quickly and then communicate with building occupants, resulting in quicker and more efficient evacuations.

In May, the U.S. Department of Health and Human Services issued a set of recommendations for government and commercial buildings to defend against chemical, biological, or radiological terrorist attacks that use ventilation systems to spread the biohazard agents. Safeguards include limiting access to areas that would allow entry to air ducts and to raise the height of building ducts. (BOMA/ULI) New HVAC systems have sensors that can shut down a system if airborne toxins, such as anthrax, are detected (ULI 2002). A laser spectrometer is a new device that can be used in order to detect explosive chemicals or poisonous gases up to a mile away from a building. This system analyzes ambient air samples via infrared laser light and can recognize the unique frequencies of suspect chemicals in order to alert authorities of a possible chemical attack. In fact, a laser spectrometer would have been able to detect the ammonia compounds in Timothy McVeigh's truck bomb used in the attack of the Oklahoma City Federal Building in 1995. (Dolan) It is difficult to conclude at this time if a significant number of buildings will begin implementing such devices to defend against chemical, biological, or radiological attacks.

Building Management Changes

Lawrence Graham, Senior Vice President of Operations and Development for Brookfield Financial Properties in New York, believes that in spite of September 11, there is a great future for high-rise office buildings. The cost of enhancements now necessary after September 11 to new buildings is approximately 1-2% of hard costs. Much of the increase in operational costs is due to additional security costs. Increases to operating

costs of already secure buildings have been seen to go from \$0.50/sf to \$0.90/sf (ULI, 2002). Also, the large increases in insurance costs affect the bottom line by making expenses greater. Companies are seeing the cost for insurance premiums increase by as much as 140-500%. Terrorism insurance issues are still costing real estate owners and investors time and money in order to secure adequate coverage. (Jones Lang LaSalle, 2002)

Since September 11, tenants are paying more attention to legal considerations. Tenants are beginning to scrutinize the “damage and destruction” clauses in leases and are exploring the minutiae of business continuation insurance. “They’re focusing more closely on where the landlord’s responsibility stops and the tenant’s starts,” states Peter Block, Director of Cushman & Wakefield in Chicago. (Office Checkpoints, November 2002)

In addition to the security issue post September 11, one of the most significant changes to building management is the desire and necessity to coordinate evacuation plans. Evacuation analysts are being hired to strategize optimal exit routes in case of an emergency and to share these procedures with employees. A building manager must plan evacuation routes with tenants and work with local officials. Building managers need to focus on public spaces in the evacuation and security planning processes.

Another concern is that the adhesive properties of fire proofing may be compromised during building renovations. Building management must insure that fire proofing is restored to code-mandated levels when tenants make improvements.

The increased evacuation route planning, implementation of security measures, and changes to operating procedures will require more thorough building management. In general, the physical changes to high-rise office buildings, in response to September 11, will not significantly increase costs, but will lead to safer and better buildings.

The cataloged responses to September 11 demonstrate improvements and changes made to corporate thinking and the physical characteristics of high-rise office buildings. Business continuity planning will ultimately lead to companies becoming more resilient in times of disaster through the use of smart data backup practices and geographic location of human capital; these are top priorities of corporate executives. It will be interesting to see how geographic dispersal regulations will affect the future of the financial industry and the economy of New York City. The increased popularity of data backup storage is not surprising, but only time will tell if the trend continues and if it will include smaller companies. The creation of better buildings should incorporate smarter and safer structural and architectural designs. The implementation of heightened visible security and sound emergency preparedness plans are probably the most important issues to employees. The improvements and changes made to corporate strategic planning and individual buildings since September 11 will ultimately strengthen the integrity of the office market as a whole. In these challenging times, it is critical for the real estate industry to reflect society’s changing space needs.

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