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**“Demolition by neglect is prohibited by law.”**

Miller, page 5
Americas

In the USA’s skyscraper epicenter, New York City, a flurry of exciting news stories issued forth in the first five months of the year. Although the project’s scale has made it impossible to hide, the demolition and replacement of 270 Park Avenue, the JPMorgan Chase World Headquarters, moved into a new phase in April 2022, when official renderings of the new 60-story headquarters were released. The 423-meter, Foster & Partners-designed office tower will feature 232,257 square meters of space, and is to become the tallest building in New York City to be fully powered by a New York State hydroelectric power plant, operating with net-zero emissions. The announcement offset somewhat the criticism the project has received for being constructed on the site of the tallest building ever demolished, the former Union Carbide Building (215 meters, 1960).

In uplifting local news across Midtown, the historic Palace Theater was lifted nearly 10 meters during the construction of TSX Broadway, a new hotel on Times Square. The operation used a system of 34 hydraulic jacks to hoist the 6,350 metric-ton venue at a speed of about 6 millimeters per hour over the span of four months. Work will now commence on restoration of the theater, whose new elevated position will make way for 9,290 square meters of retail space at the base of the structure.

The news also improved for The XI (Eleventh), a complex comprising two twisting residential towers designed by Bjarke Ingels Group along the High Line on Manhattan’s Far West Side. The project started construction in 2016 but ran into financial difficulties under its original developer and stopped work in 2019. In 2021 it was purchased in foreclosure, and construction resumed in April 2022, targeting a winter 2024 completion date.

Construction is complete on The Willoughby, a 34-story mixed-use tower at 196 Willoughby Street on Long Island University’s Downtown Brooklyn campus. The structure yields 476 residential units as well as academic and office spaces, an adjacent athletic field, and parking for 564 vehicles. Leasing is currently underway for the units, which range from studios to two-bedroom layouts.

Across the river in Jersey City, foundations are underway for Journal Squared Tower 3, a 60-story residential skyscraper and the final component in the three-building complex in Journal Square, Jersey City, bringing 600 residential apartments to market.

The big buzz in Chicago was around four finalist proposals for a new casino complex, from which a winner was selected by Mayor Lori Lightfoot on 10 May. Subject to City Council approval, Bally’s plans a casino on the site of the current Chicago Tribune printing plant on the North Branch of the Chicago River. The conceptual design of the facility by Solomon Cordwell Buenz includes a hotel tower and long esplanade along the river. Many hurdles remain, including obtaining community approvals and negotiating a payment to the city’s pension fund. If all goes to plan, the casino could open by 2026.

A real estate development firm will build a US$99 million, 364-unit tower near Stemmons Freeway and Oak Lawn Avenue in...
The recently completed One Vanderbilt Avenue tower has become the standard bearer for one of New York City’s most ambitious zoning initiatives of the past decade. Occupying a full-block site directly adjacent to Grand Central Terminal, the building embodies an innovative new paradigm of public/private partnership. The collaboration between the developer SL Green Realty Corp, the City, and various transit agencies allowed for a doubling of urban density, permitting the site to achieve its highest and best use. This resulted in the significant improvement of one of New York’s two great transit hubs, the construction of one of the world’s highest-performing commercial office buildings, the mapping of a major public plaza, and the creation of an observation experience at the tower top that has already been recognized as a world-leading visitor spectacle.

Keywords: Supertall, Transit-Oriented Development, Zoning

Introduction: NYC’s East Midtown Zoning Initiative

Commercial office space in New York City more than doubled during the period between the two world wars, and the majority of that space has been located in Midtown Manhattan. Framed by the planning construct known as “Terminal City” Grand Central Terminal (GCT) acted as the catalyst that fueled the rapid growth of the surrounding district. The decades following World War II saw another spurt of growth in the station area, much of it due to increase of commuter traffic from the suburbs to the north. In today’s environment, a combination of concerns about sustainability and the pressures of congestion have focused urban planners on the importance of transit-oriented development (TOD).

As one of two major transport hubs of the metropolitan area, Grand Central Terminal naturally fostered a zone of high-density development in its immediate vicinity, including towers such as the Chrysler Building, Lincoln Building (now One Grand Central Place), and the New York General (today MetLife) Building. In addition, premier hotels such as The Commodore, The Biltmore, and The Roosevelt were constructed. The pace of growth of the station district was slowed by the Great Depression and the Second World War. Robust densification resumed in the late 1950s, with such towers as the Seagram Building and Lever House, both exemplifying aspirational development. Over time, less commodious office buildings were added to the area, in particular along the Park Avenue corridor, featuring lower ceiling heights and now-outmoded early attempts at curtain wall enclosures.

In response to a variety of perceptions of the ills of over-densification, the 1961 revision of zoning regulations introduced limits to building area and added restrictions regarding bulk. Over time, this effectively disincentivized landlords from demolishing older, larger buildings and rebuilding more modern structures. The result all but stalled development surrounding Grand Central once again, leaving Midtown with a gradually aging building stock.

The design team carefully calibrated the tapered massing of the 1,401-foot (427-meter)-tall building to allow more daylight to reach the sidewalk than was the case with the much shorter 200-foot (61-meter) buildings that had previously occupied the site.”
Introduction and Background

Construction work is rapidly progressing on the Central Business District (CBD) of the New Administrative Capital of Egypt, 50 kilometers east of Cairo. The CBD project features 20 towers, including the 394-meter, 80-story Iconic Tower, which upon completion is expected to be the tallest skyscraper in Africa. An overview of the CBD area is illustrated in Figure 1.

Abstract

This paper presents an overview of a process of optimizing concrete mixture for tall buildings, culminating in the design of the Iconic Tower, the key component of the Central Business District of the New Administrative Capital of Egypt. The structural behavior of 76 high-rise towers was compiled and analyzed. A relationship was established between the total concrete thickness for both horizontal and vertical elements and the tower height. The formulae can be used to estimate the total concrete cost of the towers at preliminary and concept stages with sufficient accuracy. The across-wind accelerations for different towers were calculated as per National Building Code of Canada (NBCC) 2005 requirements and compared to measured wind tunnel accelerations. The results showed that code provisions overestimated the measured accelerations by around 60 percent.

Keywords: Concrete, Composite, Core, Frame, Outrigger

Figure 1. Overall view of the Central Business District at the New Administrative Capital of Egypt. The centerpiece is the 394-meter Iconic Tower.

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Charles Malek serves as the director of the Structural Engineering, Bridges, and Special Structures department at Dar. Malek’s extensive educational background emphasized on reinforced and prestressed concrete, construction techniques, and earthquake engineering. While pursuing a graduate degree in earthquake engineering, he was actively involved in research and development activities conducted by the French Commission in charge of developing the French National Version of Eurocode 8 “Design of Structures for Earthquake Resistance.” This academic expertise enabled Malek to lead the design of different types of structures, including special and complex ones, particularly high-rise buildings and long-span structures firm-wide.

Equivalent Concrete Thickness and Its Role in African High-Rises

Based on available data of around 40 towers at that time, a study by Sherif (2010) yielded the author’s concrete formula. It strikes a relationship between the self-weight of the concrete superstructure, in terms of equivalent thickness of concrete per unit of built-up area, expressed in centimeters per square meter (cm/m²) and the building.
The World’s Highest Pools: Skimming the Surface

This data study examined all 200 of the world’s “supertall” buildings currently in existence – those at or above 300 meters in height. Amazingly, of these 200, 108 (54 percent) include a pool feature. Although 103 of 108 supertall buildings with pools have been completed since 2000, the title of “World’s Highest Pool” has only changed four times: from 875 North Michigan Avenue (Chicago, pool height: 192 m) to Jin Mao Tower (Shanghai, pool height: 213.8 m) in 1999; to Shanghai World Financial Center (Shanghai, pool at 364.3 m) in 2008; and to International Commerce Centre (Hong Kong, pool at 468.8 m) in 2010.

For more detail, see the research paper The World’s Highest Pools: A Deep Dive (see page 44).

The World’s 20 Highest Pools

At 468.8 meters, the highest pool in the world is at Hong Kong’s International Commerce Centre and is open for use by hotel and spa guests. It is also the world’s highest overflow pool.

Offering unobstructed views at 294.5 meters, the rooftop pool at The Address Beach Resort in Dubai is the world’s highest infinity pool.

Poly Pazhou C2 (311 m) in Guangzhou has the highest pool in an all-office building in the world, just 32 meters above grade.
As cities around the world face climate change, many are engaging in Climate Action Plans (CAPs) to coordinate the responsibilities of city-makers from across the public and private spectrum. We asked experts, “How can climate action plans benefit our cities?”

One path toward positive change and effective management of climate impacts on urban habitats is establishing and executing comprehensive climate action plans (CAPs). The best CAPs provide clear greenhouse gas (GHG) reduction targets and specific evidence-based methods for achieving them, to eventually reach a goal of carbon neutrality, while also combating and addressing the risk of climate hazards.

Ultimately, cities and city districts — and their occupants — benefit. But where does one get started? What are the hallmarks of effective climate action plans?

First, experience has shown that creating a CAP is the best approach and first step to managing the vast scope of climate policies and safeguards required in dense cities, districts, and individual developments. From university campuses to large city districts and even municipalities, CAPs are a foundational tool for the successful stewardship of a suite of projects that tackle climate change. Organizations like C40 Cities provide key resources to support the development of CAPs and action towards more climate-resilient cities.

In a typical CAP, technical climate-related strategies and interim deliverables set the stage for actual achievement of reductions in GHG emissions by a given date, often 2030, 2040 or 2050. Beyond addressing only buildings, CAPs also holistically address interrelated systems from transportation and waste management to green infrastructure and renewable energy. This leads to a roadmap marrying diverse measures, such as energy purchasing and efficiency, electric vehicle infrastructure, composting, drought-tolerant and flood-prevention landscaping, low-carbon materials, and more.

In this way, a CAP prompts large-scale change in GHG emissions and the overall operational footprint of highly developed urban areas. They are versatile by including both strategy and implementation, as illustrated in the recently unveiled CAP created by the Battery Park City Authority (BPCA) in collaboration with Buro Happold. Involving an interdisciplinary team of consultants, engineers and planners, the team crafted an aggressive, but achievable plan calculating current GHG emissions for the 92-acre (37-hectare) New York City community alongside projections of annual reductions through 2050.

Central goals include obtaining 100 percent renewable energy sources for the district’s electricity, and commitments to a 99 percent reduction of transportation emissions, by making 99 percent of privately-owned vehicles electric by 2040. Other goals include a 47 percent reduction in fossil fuel use; a 79 percent cut in GHG emission from energy use; use of sustainable modes on 80 percent of local trips; 75 percent less waste sent to landfills, including 90 percent of organic waste cut, and 80 percent of organic waste diverted from landfills. Modeling emissions through 2050, a decarbonized grid with support from renewable energy sources has the largest impact on neighborhood emissions, with building retrofits and electrification increasing the benefits. This knowledge allows BPCA to prioritize projects that quantifiably provide the biggest GHG reduction first.

Climate action plans offer foresight and clear planning for decision-makers in urban habitats with tall buildings. CAPs offer a broad scope, applicable and scalable from a single skyscraper to regional government. City-makers must employ CAPs for consistent, committed, and measurable progress on cutting global GHG emissions.

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About the Council

The Council on Tall Buildings and Urban Habitat (CTBUH) is the world’s leading non-profit organization for all those interested in the future of cities. It explores how increased urban density and vertical growth can support more sustainable and healthy cities, especially in the face of mass urbanization and the increasing effects of climate change worldwide.

Founded in the USA in 1969, the CTBUH member network embraces more than a million professionals working in all building industry sectors in almost all countries of the world. With offices in Chicago, Shanghai, and Venice, the Council runs hundreds of multidisciplinary programs across the world each year, through its regional chapters and expert committees, its annual conferences and global awards program, through funded research projects and academic collaborations, and via its extensive online resources and physical outputs. The Council is perhaps best-known to the public as the arbiter of tall building height and the global authority that bestows titles such as “The World’s Tallest Building.” Operating on a global scale, CTBUH serves as a platform for both cutting-edge information-share and business networking for all companies and professionals focused on the inception, design, construction, and operation of cities, and the buildings they comprise.

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ISSN: 1946 - 1186