Case Study: DJI Sky City, Shenzhen
Designing Biodiverse High-Rise Façade Microbiomes
Exploring IoT for Vertical Transportation
K2: Explorations in Vertical Urbanism
Skyscrapers as a Complex Response To Rising Waters
Sea-Level Rise Susceptibility
Rising waters provide a unique opportunity to change the relationship between urban dwellers and the natural elements and rethink the notion of resilience in the cities, too often defined today in terms of opposition to, rather than harmonization with nature.

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Americas

In the northern regions, sustainable development is on the rise; a 25-story residential timber building is proposed in Vancouver, Canada. The new building, Prototype Phase 1, constructed with a hybrid concrete-steel-timber structure, will be part of the fifth phase of a Main Alley tech campus in the Mount Pleasant district. It is the first case study for Westbank’s Net Zero Lifecycle Carbon prototype, with the intent that this design could be replicated.

In Toronto, applications for an Official Plan Amendment, Zoning By-Law Amendment, and Site Plan Approval have been submitted to the City of Toronto by Bousfields Inc. is seeking approval for a mixed-use development, two new public streets—one east-west, the other north-south—and a park, which would replace a Toyota dealership on the west side of Dufferin Street north of Lawrence Avenue West. In a new adaptive reuse development, another plan has been submitted to transform the 21-story Cambridge Suites Hotel into a 71-story residential mixed-use building with a “pencil tower” designed with the latest sustainable green building features.

It proposes 560 condo units for a total of 40,557 square meters of residential space, along with 126 square meters of retail space at grade.

In the United States, the Town Tower in downtown Oakland is a new 46-story residential building at 325 22nd Street for which pre-application documents have been submitted, and would be among the tallest additions to the skyline, rising 487 feet (148 meters), well above the city’s current tallest, the 404-foot (123-meter) Ordway Building. The development will create 596 rental apartments.

Chicago continues to build, with a US$166 million, 35-story residential tower approved by the City Council on 28 October. The high-rise at 301 S. Green St. will replace a parking lot and one-story industrial building. The design will provide a total of 362 apartments, of which 73 will be affordable units. At 1234 West Randolph, a 143-meter residential building has been proposed to replace a 60-meter hotel currently located on the site.

Heading west, a new, 44-story skyscraper is proposed for the new Mutual of Omaha Headquarters. The now-completed construction plans for the 677-foot (206-meter) tower will move the Mutual of Omaha’s metro workforce of 4,000 into the downtown area. In October 2022, the first visible steps toward the construction of Mutual of Omaha’s new building could be seen. Demolition of the former library on the site was underway, with a front-end loader hauling piles of debris out of the old building.

A 34-story building, the Alcove, located in Nashville, has structurally topped out. The residential project will add 356 housing units to the city and is strategically located next to Nashville Yards, a new mixed-use district. The project is anticipated to reach completion in 2023. And, in Dallas, the 27-story office building, No. 14 Harwood, designed by architecture firm Kengo Kuma and Associates, has also recently structurally topped out.

Going to the northeast, during the week of 20 October, the transformation of a piece of downtown Jersey City is moving forward, in which the City Council officially began the adoption process of the Sixth Street Embankment Redevelopment Plan. This occurred one day after the city planning board approved 400–420 Marin Boulevard, a 60-story, mixed-use high-rise that will sit...
The Residences at 1428 Brickell, Miami. © The Boundary for Ytech

across from the eastern end of the embankment. Combined, the two projects would transform a nine-block stretch into a community-accessible elevated recreational space.

In New York City, the “city that never sleeps” continues to show its appeal to larger companies, where investment management firm Franklin Templeton has signed a 15-year, 347,474-square-foot (32,281-square-meter) lease at One Madison Avenue. The company will occupy the entire 11th through 22nd floors in the tower portion of the building. This lease follows the recently announced 328,000-square-foot (30,472-square-meter) lease with International Business Machines Corporation (IBM) and the 56,000-square-foot (5,203-square-meter) lease with Chelsea Piers Fitness. At 50 Hudson Yards, the 981-foot (299-meter)-tall skyscraper has officially opened in the Hudson Yards development and contains offices including tech company Meta and investment company BlackRock.

In construction, excavation and pilings are underway at 740 Eighth Avenue, the site of a 1,067-foot (325-meter) hotel and observation tower in Midtown Manhattan. The building will have an 825-room hotel in the tower base and an upper observatory spanning four floors with a drop ride attraction. The building will also contain retail space, two upper restaurant floors, and a pool deck. Across the river in Brooklyn, the 26-story residential building on 69 Adams Street has hit a construction milestone and structurally topped out. The reinforced-concrete structure will yield 225 units, as well as provide retail frontage, a rear yard, and 61 parking spaces.

Along the east coast, in Charlotte, the Queensbridge Collective complex has revised its plans from three proposed high-rises (one office and two residential) to two (one office and one residential). The change also revises the previous heights from the original plan, which had a 42-story office building and 38- and 30-story residential buildings. The new design shows a 42-story office and a 45-story residential building.

In Florida, designs were revealed for a 47-story cylindrical mixed-use building at 633 Southeast 3rd Avenue in Fort Lauderdale. Developed by Dependable Equities, the project will have activated walkways, and the tower design will be dominated by a sequence of stepped, rounded volumes that form the massing of the tower as it rises. The program comprises 830 rental units and commercial space.

Real-estate development firm Ytech has announced The Residences at 1428 Brickell, a high-rise luxury condominium development that integrates photovoltaic glazing within the building’s façade. Planned in Miami’s Brickell Financial District, the tower will incorporate solar panels into its façade. A construction start date is yet to be determined.

THEY SAID

“The visual cues you get on the horizon are disconnected from any preexisting geology. What you get instead is the generic, real estate-driven extrusion of volumes as tall as they can be within the constraints of financing and regulations.”

A Twin-Towered High-Tech Headquarters

Abstract

A new headquarters for DJI, a robotics company, was completed in Shenzhen in September 2022. Across the two towers, office and research spaces are arranged in floating volumes cantilevered from central cores by large megatrusses and circular profiled steel suspension rods. The first use of an asymmetrical suspension steel structure in a high-rise tower of this scale, the innovative structure reduces the need for columns, thus creating impressive and uninterrupted office and research spaces. It also allows for quadruple-height drone flight testing labs that are unique to DJI. These labs are expressed externally through the unique V-shaped trusses that give the towers their distinctive identity, against the backdrop of the city’s skyline.

Keywords: Drones, Headquarters, Research and Development, Robotics, Skybridge

Introduction

The new headquarters for Dajiang Innovations (DJI), a manufacturer of drones, cameras and other robotics, is located in Nanshan District, on the southwest side of Shenzhen (see Figure 1). Designed by Foster + Partners and engineered by Arup, DJI Sky City is the heart of innovation for the company, defying the traditional idea of office spaces, to form a creative community in the sky. The building functions include offices, research and development labs, and several amenity spaces for employees.

The building is an embodiment of DJI as a company, pushing the boundaries of innovation. At the opening, the company’s founder and CEO Frank Wang compared the building to its innovative products, calling it their “real home.” With a focus on well-being and employee growth, DJI was keen to create a “work environment that is both practical and delightful” enabling them to “work together and scale new heights of progress, wisdom, and possibilities to develop solutions that benefit society.”

When talking about the building, Lord Norman Foster referenced how “Drone technology has changed the way we experience the world around us, while pushing the boundaries of aerial possibilities.” As the “premier center of research and innovation, DJI is ready to write a new chapter in the company’s history.”

The architecture and engineering teams worked closely together to design the building, which features an asymmetrical steel suspension bridge—the first of its kind in a high-rise tower of this scale. This case study provides an overview of the project’s integrated architectural and structural features, focusing on the innovative structural design, and how the strategy for the project incorporates prefabrication to enhance the speed and quality of construction.

Unique Building Massing and Functional Spaces

The site is part of a new urban development of mixed-use buildings, which provides the ideal working environment for DJI staff. The building is lifted up, freeing the ground level and integrating the surrounding green space with the pocket parks within the site (see Figure 2). At ground level, the podium features a series of gardens, which are designed as contemplative zones where DJI’s creative talent can refresh and reboot (see Figure 3).

The office and research zones in the two towers above are arranged in floating volumes, which are cantilevered and...
Figure 1. DJI Sky City, Shenzhen, is a two-tower office complex in the Nanshan district, featuring laboratory space for testing robotics, and a signature skybridge connecting the two buildings. © SFAP

Figure 2. The lifted office modules provide green space for employee recreation. © Chao Zhang

Located on the top of the floating volumes, the sky gardens provide private spaces for DJI employees to enjoy (see Figure 5). The feature skybridge, along with the sky gardens, acts as another platform for showcasing the latest drone technology (see Figure 6). The skybridge is a lightweight element that subtly and elegantly connects the two volumes, creating a delicate column-free, thus creating impressive and uninterrupted spaces. This also allows for quadruple-height drone flight-testing labs that are unique to DJI (see Figure 4). The unique spatial arrangement gives the towers their distinctive identity, against the backdrop of the city’s skyline.
Talking Tall: Blair Kamin

City Building: The Most Complicated Game

Blair Kamin, the architecture critic of the Chicago Tribune from 1993 to 2021 and winner of the Pulitzer Prize for Criticism in 1999, has delivered just praise and held politicians, planners, and architects accountable for the work they do within and beyond the city for almost 30 years. His new book Who is the City For?: Architecture, Equity and the Public Realm in Chicago, comprises of 55 articles published in the Tribune during his term, with contemporary postscripts. The book features photographs of Lee Bey, architecture critic for the Chicago Sun-Times and previous deputy chief of staff for architecture and urban planning for the City of Chicago. Kamin is interviewed by CTBUH Journal Editor Daniel Safarik for this edition of “Talking Tall.”

What is the argument being made in Who is the City For?
The argument to the public, essentially, is that equity is and should be a fundamental building block of good urban design. This definition of equity encompasses the fair treatment of neighborhoods and people who have historically gotten the short end of the stick, but also incorporates the financial meaning of the plural of “equity,” as in “equities” or shares of stock. My view is that we share the public realm, the parks, the plazas, the streets, the sidewalks, the transit, the bike lanes that make up the area between our buildings. And this is an important part of equity, because we all have a stake in it. And we all rise or fall, depending on the quality of that shared public realm.

Through its trials and tribulations, what can Chicago teach other cities about resilience, regeneration, or equitable urban development? Clearly, there have been stumbles and successes. Well, there have been major stumbles. Discrimination, disinvestment, and deindustrialization have really wreaked havoc on Black and brown lives and communities. Only recently has the city taken a systematic approach to reversing this historic pattern. It’s being done under the current mayor Lori Lightfoot and her planning commissioner Maurice Cox. The most significant of their initiatives is a program called INVEST South/West, which has amassed US$2.2 billion in private and public funding to rebuild a dozen commercial corridors and 10 communities on the south and west sides of the city. This is a major project of national significance. It takes the vehicle of the public-private partnership, which traditionally has been used to fund glamorous downtown projects like Millennium Park (see Figure 1), and employs it to the potential benefit of the city’s poorest neighborhoods.

What we don’t know yet is whether INVEST South/West will succeed. Funds have been raised and very intelligent plans have been drawn up. Although the signature projects in this program have not started yet, once they are completed, we’re going to get a much better idea of whether this begins an essential part of remaking Chicago as a more equitable city, and whether it really turns the ocean liner of the city, as it were, in the right direction. So, Chicago is an exemplar of both some of the worst urban design and urban financing practices of the past several decades, but it’s also potentially an example of efforts to reverse those practices.

Even the neighborhoods that have historically benefited from public and private investment, such as the Loop central business district, have struggled amid the uncertainty of the COVID pandemic and its aftermath. What is the prospectus for regeneration in the central areas? There is a need for reinvention. At this point, it appears that fewer people are likely to be coming to the office every day, at least in the short term. There are many vacancies in the historic 1920s skyscrapers of LaSalle Street,
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.