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Tall + Urban Innovation 2020: Dominant Trends

Abstract

Providing a global overview of tall building development, design and construction, the CTBUH Awards Program and related Tall + Urban Innovation Conference annually survey projects, technologies, and approaches currently reshaping skylines and urban spaces. As much as skyscrapers are celebrated for their iconic presence on the skyline, the projects showcased here, all recipients of a CTBUH Award of Excellence in the 2020 program, attest to the growing investment the tall building industry has made in city-making. The singular focus on skyline presence and attribution to an individual architect or financial mastermind has served the mythology of the skyscraper well, but the reality is something altogether different.

Keywords: Best Tall Buildings, CTBUH Awards, Innovation, Sustainability, Urban Habitat

In this paper, innovations in the constituent disciplines that bring tall buildings to life, and even extend their lives— architecture, construction, renovation, the engineering of façades, fire & risk, geotechnical engineering, interior space, MEP, and structural engineering—are all explored. By diving into such details, a comprehensive portrait of the tall building world emerges, and a number of trends, some summarized below, come into focus. Here, we gather together the projects that are most representative of the dominant trends in, as well as the highest aspirations achieved by the tall building industry in 2020.

Urban Allure

New design-forward residential projects are cropping up on dense urban corners all over the world, some of them in neighborhoods in major cities not typically known for their domestic offerings. But as demand for uncompromising homes in downtown cores continues to gather momentum, giving the “suburban ideal” a run for its money, these projects boast lavish amenities, impeccably designed interiors, and sculptural, evocative morphology.

In Miami’s downtown, long known for its arts, shopping and dining, **One Thousand Museum** (Best Tall Building, 200–299 meters)

dubbed the “Scorpion Tower” due to its exterior bracing that resembles an arthropod, makes a splash on the residential market with its futuristic façade.

The striking silhouette of **OMNITURM** brings new life to a cluster of corporate headquarters in downtown Frankfurt. The slender and rationally stacked tower is interrupted by sculptural shift in its mid section, where its program changes to residential. The floor plates slide out in a spiralling movement, creating terraces and overhangs for enhanced city living.

A layered building skin with solar refracting properties adds visual intrigue to **ARO** (Best



One Thousand Museum, Miami. © Alëna Graff



ARO, New York. © CetraRuddy Architecture



DaigaGate Ikebukuro, Tokyo. © Nikken Sekkei Ltd.

Tall Building, 200–299 meters), a slender, residential tower in New York City’s theater district. The building’s unconventional shaping distributes unit size, mix, and program from top to bottom, as well as providing a generous suite of amenities.

Making Way

As urban environments continue to densify, finding spacious, undeveloped sites on which to build new vertical projects becomes increasingly challenging without costly demolitions that produce disruption and debris. Then there is the matter of pre-existing infrastructure or heritage projects that are an indelible part of the neighborhood, both of which may require innovative workarounds, resulting in the slotting of complex projects into compact sites.

This is exemplified in dense Asian cities like Tokyo, where projects such as **DaiyaGate Ikebukuro** (Structural Engineering), creatively use unconventional spaces. By hovering over the tracks of the Seibu line, it provides a connection between two sections of the busy Ikebukuro Station, helping to consolidate busy commuter flows for a more streamlined experience, and stitching together two sides of a divided neighborhood. Space is also particularly tight in China’s capital city, where the soaring, full-height atrium of **Leeza SOHO** (Best Tall Building, 200–299 meters) unites the tower’s two volumes, split diagonally by a new underground rail line.

In one of Melbourne’s historic precincts, **271 Spring Street** (Best Tall Building under 100 meters) deftly navigates around a bevy of site-specific challenges on its already limited plot—underground rail loop tunnels through the center of the site, an electricity sub-station, two high-voltage easements, two preserved buildings, and an archeological overlay—to build a new, cantilevered office tower with façade screen elements that reinterpret the heritage roof geometry below.



Leeza SOHO, Beijing. © Cao Baiqiang



271 Spring Street, Melbourne. © ISPT Pty Ltd



InterContinental Shanghai Wonderland Hotel, Shanghai. © Shimao Group

In another example of turning spatial quandaries into remarkable designs, Shanghai’s **InterContinental Shanghai Wonderland Hotel** (Fire & Risk Engineering) didn’t have to contend with existing rail or utility lines; in fact it had a quite particular problem: building into the side of quarry on the outskirts of the city gave it a completely blank slate, except for the pockmarked canyon it had to transform into a resort. But transform it did, using the quirks of the quarry to give the hotel a distinctive setting. Further, it confronted a huge and nearly unprecedented obstacle to evacuation, literally turning “upside down” most of the conventions of tall building egress.

In some cases, making way might mean finding a method for removing defunct infrastructure that is inhibiting useful developments. In San Francisco, residual infrastructure left from a portion of freeway that was damaged during an earthquake 30 years prior was replaced with a new residential tower, **500 Folsom** (Geotechnical Engineering).

Zero operational interruption is a desirable outcome for many projects that undergo renovation, but the logistics are often challenging. At **Claridge’s Hotel** (Geotechnical Engineering) in London, a five-story basement was excavated below

“Tall building concepts continue to push past the inclusion of green walls and planters, blurring the boundary between indoor and outdoor space, and between organic and human-made forms.”



Claridge's Hotel, London. © Arup



Collins House, Melbourne. © Hickory Construction Group Pty Ltd



Sixty Martin Place, Sydney. © HASSELL/Investa

the building via 400 meters of underground tunnels. In this way, the stately hotel—in operation since the mid-19th century—was able to remain open throughout.

Respect Your Neighbor

Finding the balance between the needs associated with erecting a high-quality office tower, the tenant customer, local context, and heritage conservation principles, is often a challenge for tall building construction and renovation projects in already-dense cities. However, with thoughtful materials, strategic engineering and construction strategies, and responsive design geometries, cities can continue to evolve harmoniously, celebrating both old and new.

Two Australian projects have incorporated or framed heritage façades elegantly into new builds. For **Collins House** (Construction) in Melbourne, the challenge of building in the airspace above the historic building was increased by an already-tight site, but prefabricated modules helped significantly in reducing build time. Further north in Sydney, **Sixty Martin Place** (Best Tall Building 100–199 meters), an office tower with double- and triple-height interconnected workspaces, helps bring the adjacent heritage St. Stephen's Church into the foreground, by gently pulling back its upper façade, allowing a previously-hidden church wall to enjoy public view. The tower portion of **ARC by Crown Group** (Best Tall Building under 100 meters) is a distinct and sculptural addition to the Sydney skyline, but at ground level, its podium base reflects the character and scale of the existing streetscape, with masonry arches and a high level of public amenities.

The design concept for **Museum Tower Kyobashi** (Best Tall Building 100–199 meters), containing office and museum programs, was engineered with the rich history of Tokyo in mind. Inspired by the tightly woven streets interspersed with wide-open spaces of the Kyobashi district itself, the project also channels a long tradition—dating back to

the Edo period—of providing an art space for the local community.

Assuta Bauhaus Village (Urban Habitat – Single Site Scale) reconnects a former hospital site to the nearby pedestrian network in Tel Aviv, enlivening the urban habitat with varied landscaping and maintaining existing ficus trees, using them as the framework for expansive green rejuvenation. The new tower is outfitted in white aluminum panels and features a transparent atrium, relating to the Bauhaus-style buildings populating the historic White City area.

Activating the Waterfront

Waterways in all their iterations have always been at the nucleus of urban life; apart from their life-sustaining properties, their organic movement, reflective of the sky's changing canvas, hosts the most dear attractions at their edges, from luxury residences, to vast public parks, to markets and entertainment. Still, waterfronts can fall into disrepair quickly if they are not well-maintained or popular, which is why it is essential that adjacent tall building projects are permeable, accessible, and attractive to pedestrians.

A former shipyard operated in the 1800s forms the backdrop for **Gala Avenue Westside** (Best Tall Building under 100 meters) in Shanghai, where a crystal lattice-patterned façade is a gateway to several retail hubs, solidifying a connection to the riverfront and greenbelt that sits between the site and the water's edge.

Part of a five-year strategic waterfront revitalization plan, the city of Toronto committed to redeveloping underutilized and brownfield sites into accessible and active hubs for living, working, and recreation. These efforts included **River City 3** (Best Tall Building under 100 meters), a pixelated black-and-white residential tower which is linked to surrounding neighborhoods and integrates its waterfront pathways with the city's parks and other amenities.

Positioned at the water's edge, **Victoria Dockside** (Urban Habitat – Single Site Scale & MEP Engineering) in Hong Kong not only enhances the waterfront, with a sunken harbor plaza and water wall, but also leverages the harbor as a heat and cold sink, which is a highly efficient means of heat rejection for chiller plants. The building shades a landscaped playground on the podium roof,

while an urban farmhouse and nature discovery park enhance public education.

Bringing the Outdoors In

As the built world continues to reference nature in order to increase energy efficiency, user well-being, and create captivating aesthetics, tall building concepts continue to



Museum Tower Kyobashi, Tokyo. © Nikken Sekkei Ltd.



Assuta Bauhaus Village, Tel Aviv. © Moshe Tzur Architects



River City 3, Toronto. © Jose Uribe, Pureblink



White Tree, Montpellier. © Iwan Baan



18 Robinson, Singapore. © Tim Griffith

push past the mere inclusion of green walls and planters, blurring the boundary between indoor and outdoor space and organic and human-made forms, both literally, and in a more abstract interpretation, involving molding interior spaces to mimic shapes, lines and gradations found in the outdoors.

For Montpellier's **White Tree** (Best Tall Building under 100 meters) its biomimicry



One Excellence Tower 1, Shenzhen. © CITYGROUP DESIGN CO., LTD

strategy is illustrated through the use of its balconies that reach out from its "trunk," as leaves on a tree stretch towards the sunlight. These *brise-soleil*-shaded balconies, which also function as living rooms, encourage occupants to take advantage of the city's abundant sunlight during daily activities.

The **U.S. Embassy, London** (Best Tall Building under 100 meters), took its cues from the biodiverse flora of the two nations it represents diplomacy between: United States and the United Kingdom. A winding trail helps embassy visitors navigate from the urban habitat around the building, through to its interior gardens, which are filled with various native plants from both sides of "the Pond." The building's crystalline façade mantle helps diffuse incoming light in a way that feels organic, with an effect similar to sunlight filtering through shady trees onto the forest floor below.

Another interior that plays with light by mimicking organic forms is the **One Excellence Tower 1** (Interior Space) in Shenzhen, which was designed to offer a dose of tranquility in the center of the city's busy Qianhai zone. The building's curved walls and ceiling, composed of parametrically designed natural stone plates for a seamless surface, gently diffuse illumination, softening and subverting the often-harsh lighting of office buildings.

In the congested Thai capital, **Rosewood Bangkok Hotel** (Best Tall Building 100–199 meters & Interior Space) carves out a serene respite with terraced and overhanging gardens, and a descending

water feature that travels through the building's dynamic, open center, evoking the country's famous caverns.

Living Lushly, Working Well

Singapore continues to amplify its "city in a garden" planning strategy with ultra-verdant vertical projects that stitch plant life to every brick and balcony, as well as other unexpected places. The dramatic **18 Robinson** (Best Tall Building 100–199 meters) cleaves at the top of its podium to reveal a stepped garden, yielding to a series of interior gardens that cleanse the office tower's air supply and infuse it with oxygen. Creating a veil of floating gardens for its residents and onlookers alike, **EDEN** (Best Tall Building 100–199 meters) is emblazoned with half-shell-shaped balconies, each teeming with plantings, collected from over 20 species of tropical flora. Connected with the rest of Singapore via a 24-hour public plaza, the hotel and office complex **DUO** (Urban Habitat – Single Site Scale) features landscaped areas at the ground level, on terraces, and at the roof level, providing accessible green space equal to 100 percent of the site area.

Skyscraper as Centerpiece

Representing tremendous faith in the "if you build it, they will come" maxim, these towers anchor new and developing districts by providing a veritable cornucopia of amenities, office space, residences, retail, conference, and recreational spaces. These bold towers are creating their own context.

The tallest completion in 2019, **Tianjin CTF Finance Centre** is located in Tianjin's Binhai New Area, an expanding business core prizing the balance of density and human-scale streets. The building's sinuous silhouette optimally accommodates the relationships between the different leasing spans of its three programmatic elements.

The **Zhuhai Tower** (Best Tall Building 300–399 meters) convention and exhibition center, part of the Shizimen business cluster in Zhuhai, anchors a multifunctional development, accessible by the crucial Hong Kong-Zhuhai-Macau bridge. With its smooth exterior curtain wall, the tower is akin to an illuminated trophy on the shore of the South China Sea.

As the central fixture of the Tun Razak Exchange and financial quarter, **The Exchange 106** (Best Tall Building 400 meters and above) completes Kuala Lumpur's "Golden Triangle" of redeveloped land in its center. In its wake, over 20 lifestyle, office, and residential buildings are expected to follow, continuing to drive economic activity to the area.

Nine kilometers from St. Petersburg's historic center, the towering, faceted **Lakhta Center** (Best Tall Building 400 meters and above), Europe's tallest building, is catalyzing the rapidly developing Primorsky district. Making the most of an underutilized space previously used for sand storage, the building offers public amenities such as an education center and a medical center, as well as office space and observation decks.

Beijing's **CITIC Tower** (Best Tall Building 400 meters and above) is the centerpiece of a new 30-hectare CBD in the Chinese capital, with the tower well-integrated into public transit and pedestrian passageways at multiple levels. In the case of **Suzhou IFS** (Best Tall Building 400 meters and above), which stands in a city with a 2,500-year history, the inclusion of a supertall building enhances the city's already-strong touristic appeal, firmly establishing it as an urban center that thrives in both the past and the present.

Worker Health & Well-Being

In the modern workplace, well-being is considered fundamental for enhanced creativity and productivity, and lower turnover. This quality is pursued through a variety of means in tall building office environments, chiefly by enhancing indoor air quality, providing access to natural light and greenery, and designing flexible space typologies that eschew the one-size-fits-all

model of years past, instead adapting to individual preferences and work styles.

L'Oréal Headquarters Düsseldorf (Interior Space) is well-equipped for this new flexibility, with the inclusion of 1,000 custom furniture units for its workforce, which populate the building's space types: semi-open meeting zones, "landing zones," "think tanks," quiet rooms, and traditional workstations.



EDEN, Singapore. © Swire Properties



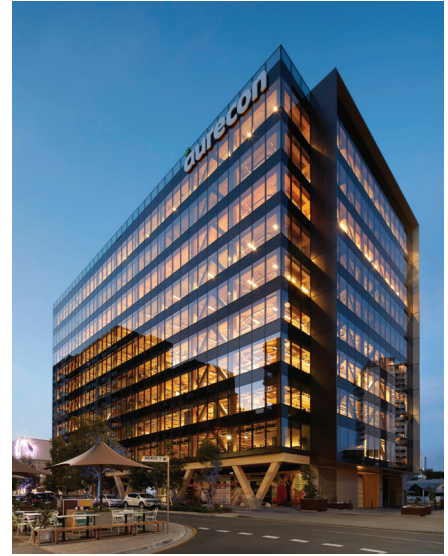
CITIC Tower, Beijing. © H.G. Esch



L'Oréal Headquarters Düsseldorf, Düsseldorf. © Ralph Richter



Comcast Technology Center, Philadelphia. © Nigel Young / Foster + Partners



25 King, Brisbane. © Bates Smart



Hanwha Headquarters, Seoul. © Rohspace

In Philadelphia, the **Comcast Technology Center** (Best Tall Building 300–399 meters) handles high-speed internet rather than beauty products, but its interior approach shares the L'Oréal Headquarters' fluidity and flexibility. Occupants of what is now the city's highest building enjoy voluminous, loft-like office space, with each floor wrapped around triple-height skygardens for a daily infusion of tranquility and inspiration.

Now one of the Australia's tallest and largest timber commercial buildings, **25 King** (Best Tall Building under 100 meters) in Brisbane leaves behind fluorescent lighting and drab interiors for a sprawling exposed-timber veranda, floor-to-ceiling windows, and numerous green walls to create a warm, humane environment for employees.

The design team behind the headquarters building of **Hanwha Headquarters** (Renovation) a producer of photovoltaic (PV) panels, prioritized employee wellness and comfort during its renovation. In addition to

embedding solar technology into its façade, the update features an interior replete with natural materials and plants, and lobbies sprinkled with coffee nooks, to encourage the nurturing of essential social connections throughout the day.

Conclusion

Through the 22 categories of the CTBUH Awards Program and the affiliated Tall + Urban Innovation Conference, the Council exerts a concerted effort to embrace the wide spectrum of disciplines and specializations that bring tall buildings to life, and, just as importantly, sustain and lengthen their lifecycles. Due to space limitations, only a few of these achievements can be discussed in these pages. We encourage readers to expand their understanding and appreciation of the work of their peers through the numerous vehicles we now provide for doing so. ■

See all winners of the 2020 CTBUH Awards at: tallinnovation.com/program/projects-featured. See the full program of the Tall + Urban Innovation 2020 Conference, with presentations on all of the projects mentioned, at: tallinnovation.com.

“The one-size-fits-all office of years past is now adapting to individual preferences and work styles.”