TALL buildings + URBAN habitat

Volume 4

Council on Tall Buildings and Urban Habitat

TALL buildings + **URBAN** habitat

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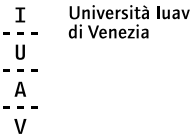

The projects profiled in this book are those submitted to the Council on Tall Buildings and Urban Habitat's 2021 Global Awards program. See page 302 to learn more about this program.

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La Bella Vita

Taichung, Taiwan, China

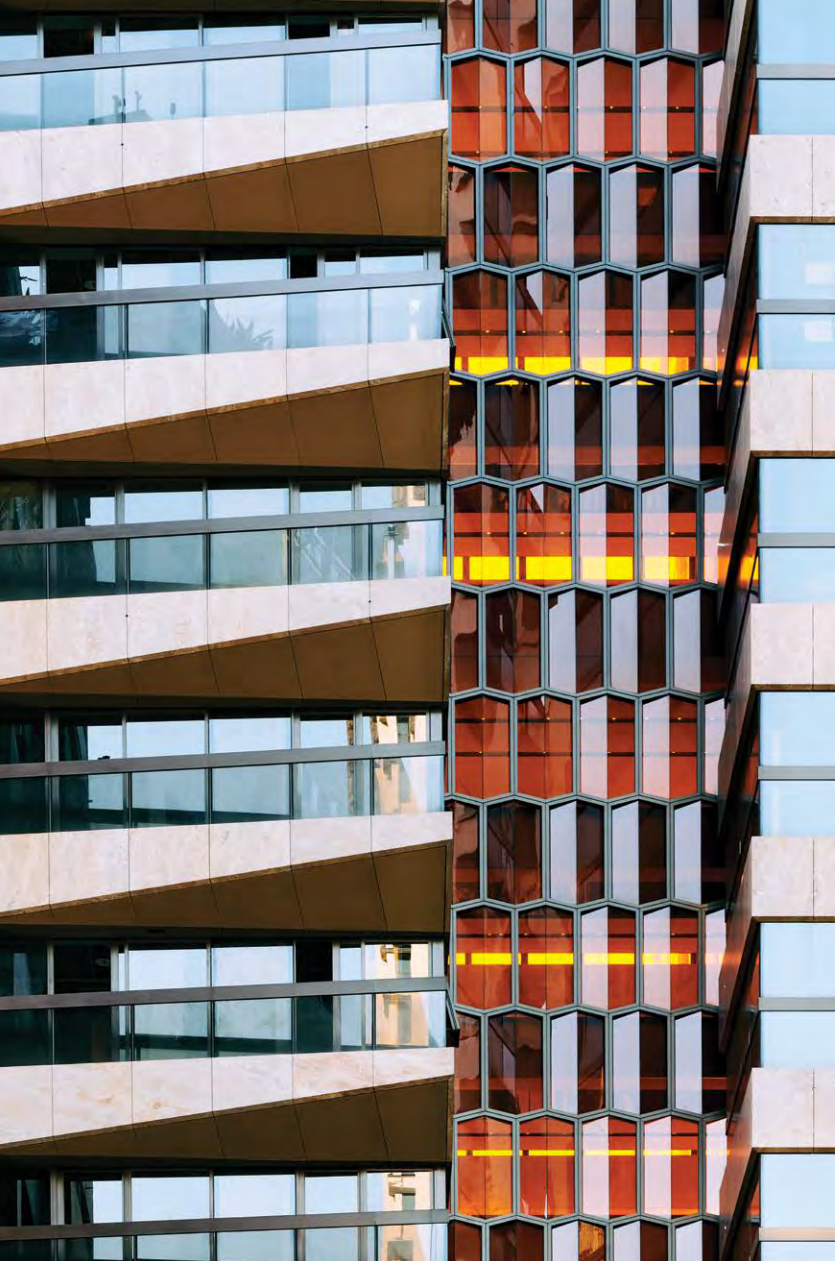
Completion Date: August 2020
Height: 128 m (420 ft)
Stories: 33
Area: 33,000 sq m (355,209 sq ft)
Primary Function: Residential
Owner/Developer: Continental Development Corporation
Architect: Antonio Citterio Patricia Viel (design)
Structural Engineer: Evergreen Consulting Engineering (design)
MEP Engineer: Continental Engineering Consultants, Inc. (design)
Contractor: Continental Engineering Corporation (main contractor)

La Bella Vita fosters a strong relationship with its urban context and the vertical orientation of the surrounding buildings, adding new possibilities for living in Taichung's fast-growing 7th District. The high-rise building and its landscape-designed surroundings recall the public character and the green identity of the nearby Charlotte Park, while also providing secluded, refined spaces for the use and needs of its residents. Located in the proximity of several department stores, civic buildings, and cultural venues, the project presents a new holistic lifestyle offer that—in addition to the building's residential function—incorporates retail spaces that can be easily accessed from the street level. With its central core volume wrapped in a honeycomb-patterned window structure that breaks light and reflections, the tower projects a crystalline quality that sets it apart from the neighboring buildings. This tall central volume ties together the four residential volumes, and marks the locus of the building's green core, stretching towards the outer boundaries of the site and recreating the atmosphere of a public park setting.

The distinct identity of La Bella Vita is expressed by the alluring composition of the building's seemingly disjointed, yet complementary volumes. Four lower volumes of stacked balconies allude to the materiality and the articulations of long stretches of rock deposit formations found on the surface of the Earth. They combine together with the tallest, amber-colored volume that ties all building masses together, creating a sense of sophisticated playfulness. The building's architectural concept is mapped out by the simple and clear separation between the shared and private areas of the residential tower. All shared areas, vertical connections, technical and support spaces are located in the middle of the rectangular space, enclosed by the four residential volumes—creating a distinct vertical centrality, stretching from the ground level to the highest points of the building. With its characteristic amber color and its distinctive height, this central core embodies refined purity through its large-scale honeycomb façade, which stands in contrast with the distinctly horizontal slabs of adjoining volumes.

Through repeated use of this geometric shape that is also echoed in the design of the interior spaces, the project acquires a recognizable quality among the surrounding buildings, creating a distinctly Milanese language of fine living. The use of cut stone and clean geometric shapes in the building's interiors and exteriors is a result of a pragmatic approach to design. La Bella Vita is a collection of residences curated to the finest details to evoke a sense of refined sophistication, and to encourage practices of communal living. Residential units feature large, open balconies and uninterrupted views that create a unique sense of outdoor living in the urban context. A shared kitchen on the amenity floor features an electric wine cellar built into the wall, paralleling two countertops with generous workspaces and wash basins.

Throughout its entire height, the building provides three-floor-high lobbies, marked by their unique architectural identity, to group communities of residents together. The lobbies feature elegant finishes and indoor trees—partitioning the high-rise building into green and livable "biospheres" that delineate a framework for interaction and exchange among residents. The ground-floor elevator lobby features a sculptural reception desk, backed by a mesh screen, whose soft angles echo the hexagonal honeycomb-shaped windows beyond.



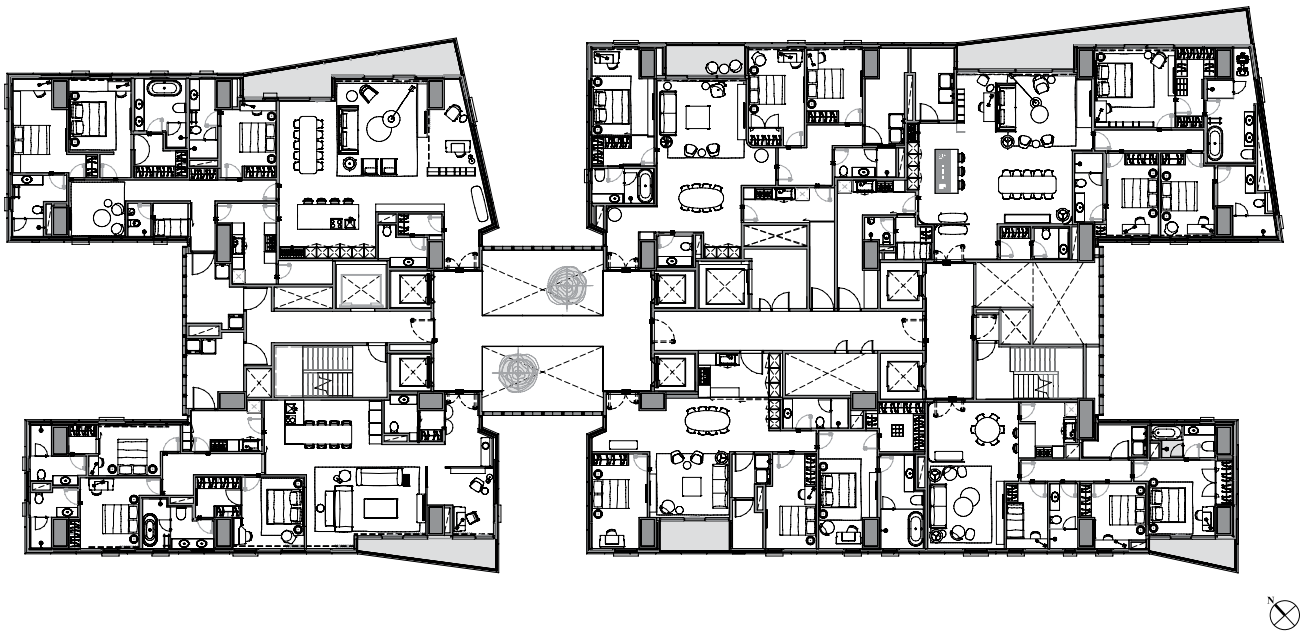
The distinct identity of La Bella Vita is expressed by the alluring composition of the building's seemingly disjointed, yet complementary volumes.

Left: A detail view of the juxtaposition between the tapered slab volumes containing the apartments and the "honeycomb" section enclosing the circulation core.

Below: A typical floor plan of the building demonstrates the multiple configuration benefits of the interlinked towers and skewed floor plates.

Opposite Top: Small roof gardens are included atop the marbled-slab volumes.

Opposite Bottom: A library and lounge space looks out on a verdant garden.



Trinity

Puteaux, France

Trinity is a living tower, designed to be in interaction with its surroundings. Its off-center core introduces a new architecture in the La Défense district outside Paris. Usually enclosed here, the core is opened up and becomes one of the main elements of the project. Animated by the occupants, activity is revealed in the façade, promoting interaction between inside and outside: this includes movement of the panoramic elevators, upper-level gardens, suspended meeting rooms, and kinetic façades; all these elements give a dynamic to the scheme. From inside, the large openings provide exceptional views of La Défense. The design considers the changes underway in the modern workplace, meeting current and future needs, including those of the Millennial generation, and those introduced by the COVID-19 pandemic. It offers solutions to replace standardized, mono-functional spaces and promotes serendipity, flexibility and pooling, the essential allies of the new workplace. Creating places where people can cross paths starts from the belief that circulating people circulates ideas.

The project offers shared, flexible spaces, propitious to serendipity, including a rooftop with a wellness center, a business center including an auditorium, three double-height floors at the top, and a sequence of terraces and meeting rooms (convertible into kitchens) suspended beneath every fourth floor, directly connected to lift landings. The tower has a total of 43 planted terraces and balconies, comprising 1,500 square meters of outdoor space, which guarantee exterior access to each floor. Natural light bathes the lift landings, thanks to a glass-enclosed shaft, and the full-depth floor slabs benefit from a triple orientation. This openness gives comfort of use and aids wayfinding within the building. In addition, in each office, vertical operable windows let the user hear the sound of the exterior and breathe fresh air. The architectural experience begins in the lobby. In this significant daily circulation area, offering 4,000 square meters of services and meeting opportunities, particular attention was given to the design of the furniture, created by the architect and manufactured by a French boat-hull builder. Three custom-made, 14-meter-long sculpted aluminum furniture pieces provide sitting areas, reception and bar desks.

Completion Date: October 2020
Height: 157 m (516 ft)
Stories: 32
Area: 49,000 sq m (527,432 sq ft)
Primary Function: Office
Owners/Developers: SCI Trinity Défense; Unibail-Rodamco-Westfield
Architect: Cro&Co Architecture (design)
Structural Engineer: Setec TPI (design)
MEP Engineer: Barbanel (design)
Project Manager: Artelia
Contractor: Bateg (main contractor)
Other CTBUH Member Consultants: Cro&Co Architecture (interiors); Arup (vertical transportation)
Other CTBUH Member Suppliers: TK Elevator GmbH (elevator); Sika Services AG (sealants)

In order to successfully integrate into the dense urban context of La Défense, surrounded by architectural icons such as the Centre of New Industries and Technologies (CNIT), Tour Areva, and Tour Total, Trinity was designed as a comprehensive and contextual urban project, with public benefits. It combines three major components into a single construction program: a high-rise mixed-use building, major urban links, and a reuse of the site, thanks to a concrete slab poured above an existing seven-lane road, which creates *ex-nihilo* land "from nothing." A feat of civil engineering, the slab is fertile, providing 3,500 square meters of landscaped public space, linking two previously disconnected neighborhoods, and improving access to La Défense's largest transport hub, providing concrete solutions to enhance the quality of life of users and residents. Trinity benefits from an exceptional position on the principal public space of the La Défense district. In its massing, the project has respected its urban environment by maintaining views towards the adjacent church, keeping a certain distance from the Tour Areva, and by framing views.

Single-Site Scale

The "Single-Site Scale" designation refers to a building or set of buildings and the immediate adjacencies. In this section, the quality of the engagement between tall buildings and the scale of the human is under the examination lens. Key features include strategic greenery and the successful integration of indoor and outdoor spaces. Exemplary projects forge walkable urban habitats that ultimately make density work better for everyone.

18 Robinson, Singapore

The new 18 Robinson tower (see page 294), with a landscape consisting of both public realm at the ground and skyterraces, occupies a tight triangular site in Singapore's Central Business District (see Figure 1). At the end of Robinson Road, the architecture makes the most of its unique setting, with its dramatic play of volumes and angular planes. The tower's vertical landscape rises from the elevated ground plane to the skygardens, wrapping around the central core like wild, spontaneous vegetation colonizing crevices in mountain cliffs. As time passes, the vegetation will mature and fill out the voids created by the architectural volumes.

The final design result is a landscape that is both beautiful and that derives meaning from its symbiotic relationship with the architecture and the surrounding urban fabric.

The landscape narrative is interwoven with the angular architectural massing. Shade and wind analysis helped refine the skyterraces' layout and planting palette. The lower terraces, combined with the public realm's greenery, create a continuous vertical natural system, from the front of the building, wrapping all around the core and below the tower soffit. Even before the project's completion, butterflies found their way from the surroundings, through green connections to the lower skyterraces. At the base of this vertical green biodiversity corridor sits a majestic mature yellow flame tree (*Peltophorum pterocarpum*). This existing tree adds character to the junction and provides shaded comfort for people approaching the development (see Figure 2). Despite having to raise the levels of the hardscape, the design team managed to preserve the tree by creating a bridge construction around the tree and above its major roots. Small drainage gratings ensure that rainwater still finds its

Figure 1


Figure 2

The 18 Robinson design team managed to preserve a mature flame tree on the site by creating a bridge construction around the tree and above its major roots.

way to the root zone. Other smaller trees were planted to the side, buffering the hardscape approach from the busy adjacent roads.

The landscape details are kept simple and clean, unifying the skyterraces across the project. The neutral hardscape's hues and tones are integrated with the architectural palette. The natural green tones of the vegetation stand out against the dark hardscape greys, which disappear into the background. For all skyterraces, a granite paving pattern was applied, matching the green-grey hues of the public realm stone. The new linear pattern of monotonous stones also takes inspiration from the geological stratification and the rock-like nature of the building. The result is a warm paving palette and lively pattern, that is still contemporary and in harmony with the overall architectural language. The stainless-steel planter edge provides a minimal, but elegant interface between the paving and the planter. The stainless steel, in its natural color, applied in landscape, blurs the boundary between architecture and hard landscape (see Figure 3). The attractive, but not overly ornamental *Cratoxylum cochinchinense* was selected as consistent tree within the


Figure 3

Figure 1: A view of the L6 and L7 terraces, where the paving merges with the architecture. The trees define the quality of the space and give a unique green character to the development.

Figure 2: At the base of the tower, an existing, majestic mature yellow flame tree was preserved.

Figure 3: Level 28 is sheltered by the façade, but open to the sky.

Structural Engineering

As tall buildings grow taller and crop up in more places, structural engineers must balance problem solving related to stability, winds, and occupant comfort against integrating with the variable contexts and compact sites found in cities all over the world. Incorporating or building around heritage buildings is a common occurrence, as is rationalizing core stability with train tracks running through a site. Whether the solutions applied involve considering the placement of a cantilever or core, these innovative structural engineering projects apply the latest in modeling and methods to deliver pioneering projects.

35 Hudson Yards, New York City, United States

The second-tallest tower in the massive Hudson Yards complex, the mixed-use program of 35 Hudson Yards (see page 294) consists of restaurants, fitness amenities, offices, a hotel and luxury condominiums. The tower is notable for being built directly over an active rail yard, with no direct vertical anchorage into solid earth. The retail and office podium drops off at Level 14, leaving a relatively square floor plate at hotel floors up to Level 30. Starting at Level 32, the southwest corner of the tower is chamfered, creating a series of residential terraces.

The structural design needed to balance the building's many architectural programs with the limited existing support points between railroad tracks. Site constraints informed the structural solution, which included using a steel platform to overcome the lack of direct concrete connection to terra firma. In the east-west direction, the core walls align with the space available between tracks, allowing a narrow maximum width (see Figure 1). In the north-south direction, the core spans 15 meters across three tracks, providing a clear span for the gym and offices on the lower levels, and transitioning to a 7-meter module for the upper residential two-way flat plates. The tower's structural system consists of this high-strength reinforced concrete core, supplemented by a series of aligned buttress walls that extend to the building perimeter.

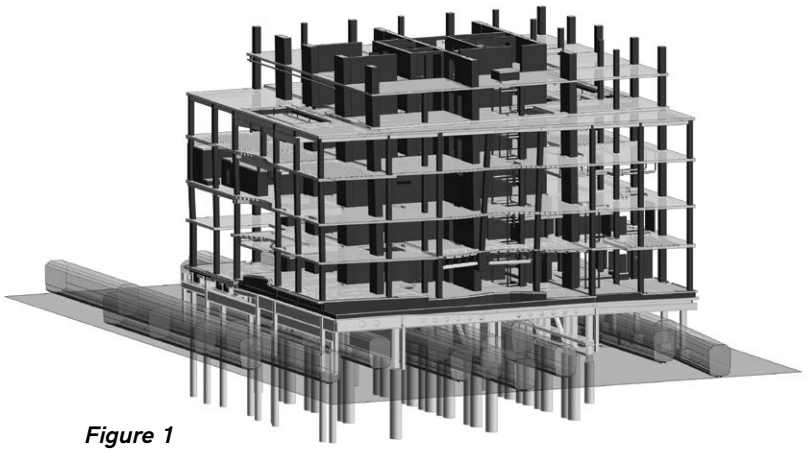


Figure 1

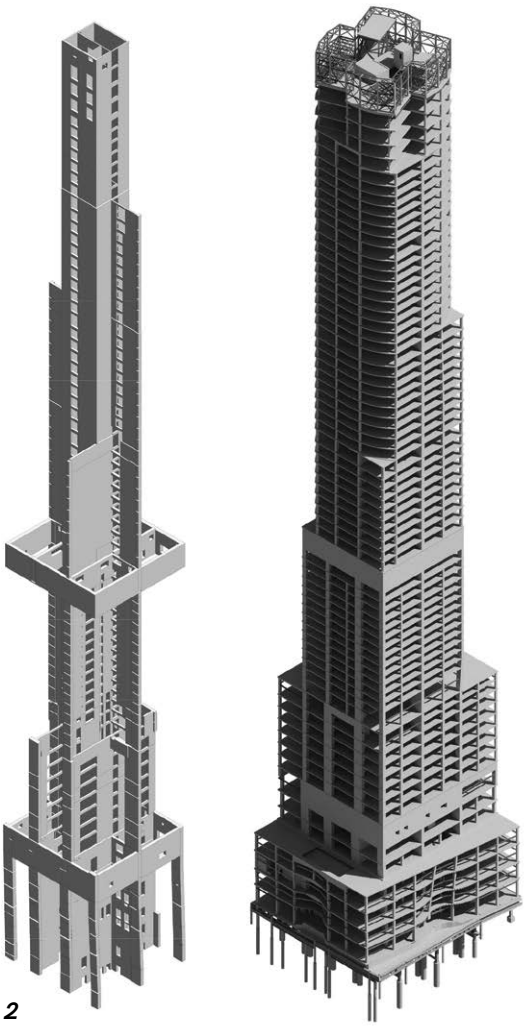


Figure 2

Figure 1: The main challenge at 35 Hudson Yards was constructing multiple programs, including a long-span fitness facility, over an active rail yard.

Figure 2: 35 Hudson Yards' structural system consists of a high-strength reinforced concrete core, supplemented by a series of aligned buttress walls that extend to the building perimeter.

Figure 3: Built-up embedded steel vertical elements within the concrete walls and columns at 35 Hudson Yards were designed to shed loads directly to the aligned steel platform columns below.

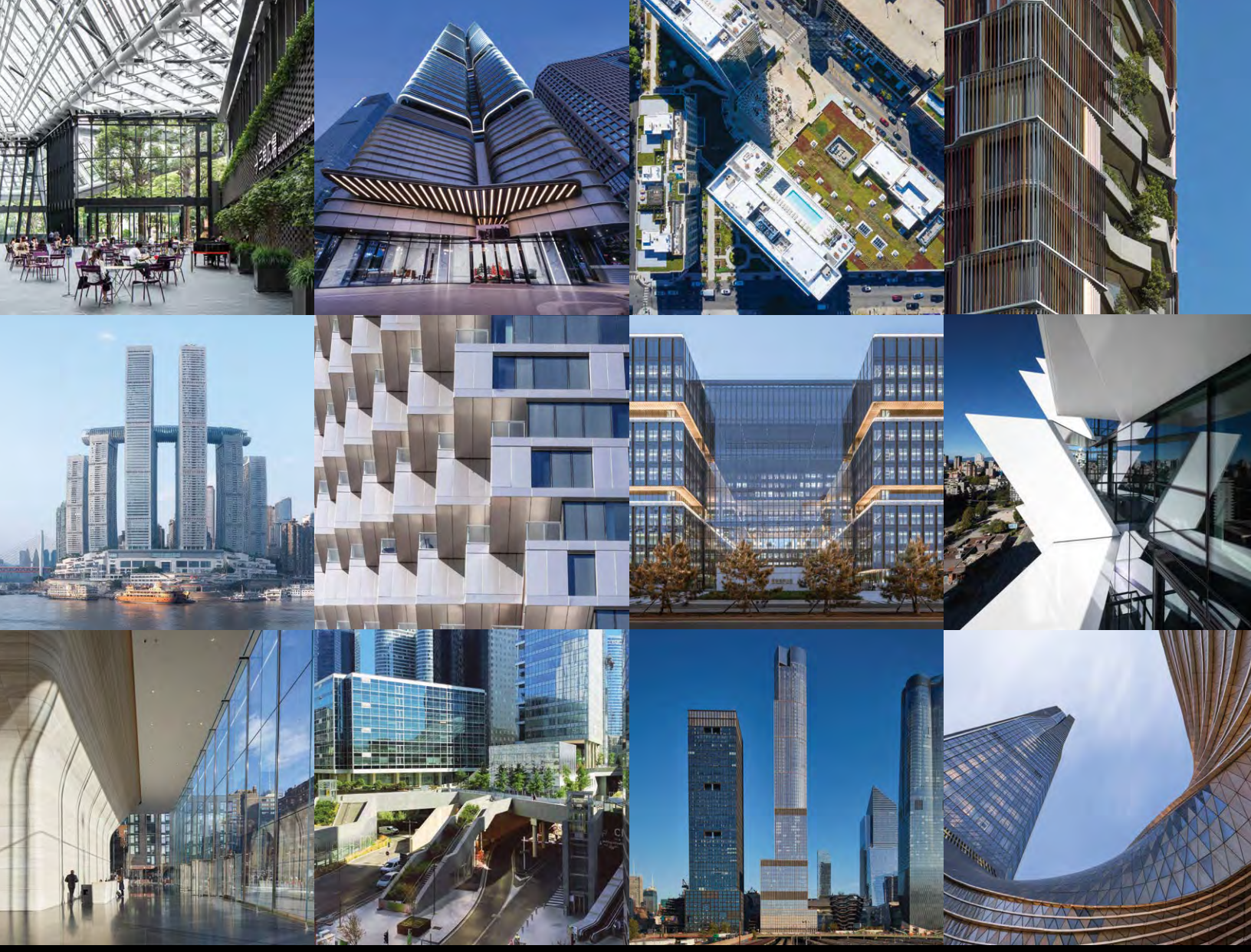
Figure 4: The south tower at 80 Collins Street, Melbourne, cantilevers over an adjoining heritage block.

The tower's structural columns also align with narrow steel columns that support the platform (see Figure 2). By using high-strength concrete rated up to 14 ksi (96 MPa), the team was able to limit the thickness of the building's structure, lighten loads on the platform, and create smooth transitions as the tower rises in a series of setbacks.

The building's residential, hotel, and office floors are designed with reinforced-concrete two-way flat slabs, a standard construction method that allowed this unconventional project to be completed on an accelerated schedule. A two-day construction cycle was achieved for all residential levels, using prefabricated elements such as wall reinforcement cages and high-strength rebar assemblages. While the tower's overall footprint aligns well with the platform, sloped columns negotiate the gap between support points where the tower's massing recedes. To integrate the reinforced concrete building onto a steel structure, consideration was given to developing consistent, redundant load paths between the two systems for gravity and lateral loads. Built-up embedded steel vertical elements within the concrete walls and columns were designed to shed loads directly to the aligned steel platform columns below (see Figure 3).

80 Collins Street, Melbourne, Australia

80 Collins Street (see Figure 4), a redevelopment of an existing precinct in Melbourne's CBD, had several challenges: an existing operational 52-story north tower, live sub-station, heritage-listed buildings, neighboring buildings with basement structures, and essential in-ground services. The resulting structural system developed addressed these constraints



To best serve the inhabitants of the increasingly dense global urban environment, city-shapers must approach the city through an interdisciplinary lens, integrating the tall building into the urban fabric by considering its role as essential urban infrastructure. As the world rebuilds and responds to COVID-19, never before has the marshaling of different perspectives been more critical in the pursuit of livable, sustainable, and healthy urban communities.

This volume highlights the very best innovations and projects, spanning the range of disciplines involved in city-making, from urban design, to interiors, to specialized engineering, all converging to make the city more resilient and enduring.

The Tall Buildings + Urban Habitat book is produced annually by the Council on Tall Buildings and Urban Habitat (CTBUH), the global authority on the inception, design, construction, and operation of tall buildings and future cities.

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