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The Synergy of a Destination: Three Successful Techniques in Global Mixed-Use Design

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Ming Zhang

Biography

Ming Zhang, President and Design Director of MulvannyG2 Architecture, is a leading designer of mixed-use developments, retail stores and centers, and corporate offices and interiors worldwide. Mr. Zhang offers a special talent and creativity in the design of high imagery projects worldwide. That talent, combined with an astute ability to address clients' needs, earns him a distinguished reputation as a world class designer.

Mr. Zhang's high-rise building design includes several award-winning projects, namely Suning Chengdu Plaza, the Beijing Chaoyang CBD Expansion Tower, Fujian Provincial Power Headquarters, Suzhou Sunny World Twin Towers, China Construction Bank Xiamen Center, and Bellevue Towers, Bellevue, Washington.

Mr. Zhang has received numerous awards and honors, including his invitation as the only architect to accompany Secretary of Commerce Gary Locke on the Obama administration's first trade mission to China in spring 2010. In 2006, the Chinese Research Center for Urban Development and Environment bestowed him with the China Landmark Award. His influence has been instrumental in creating new destinations, landmarks, and civic brands for major cities worldwide.

Abstract

The central business district is a feature common in nearly all modern cities. Regardless of location or cultural background, all successful CBDs share common aspects with regard to: accessible and affordable transportation, commercial opportunity and activity, access to cultural experiences, appealing and exciting aesthetics, and sustainable and efficient energy usage. As a rapidly developing and urbanizing country, China has spent a great deal of energy and resources on its quest to develop its urban areas so as to accommodate what some experts say will be an urban billion by the year 2030. As such, the nation has set an aggressive schedule with regard to developing and modernizing its cities.

This paper will examine this process through two examples of mixed-use design solutions involving tall buildings: The Beijing Chaoyang CBD Expansion Master Plan and the Suning Chengdu Plaza, Chengdu, China. Indeed, mixed-use has become a dominant convention for new development in China and, in

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coming years, will form the majority of developers' portfolios there. While not a new paradigm, architects are today realizing more opportunities to not only suggest the richness and density of a live-work-play environment, but to create places that use architecture and planning to provide new perspectives of China's contemporary urban experience.

Keywords: Mixed-use, Destination, Culture, Humanistic, Sustainability.

Introduction

Urban redevelopment—especially mixed-use development—began in the late 19th century in developed nations. Mixed-use is a program of land redevelopment that has played an important role in the history and demographics of cities worldwide, and is a relevant and useful development strategy because its objectives focus on smart growth, such as increasing density, reducing the number of vehicles, creating more open space, and improving the dynamism of the living environment—all while increasing local employment opportunities.

Notably, mixed-use has become a dominant convention for new development in China and in coming years will form the majority of developers' portfolios there. While not a new paradigm, architects are today realizing more opportunities to not only suggest the richness and density of a live-work-play environment, but to create places that use architecture and planning to provide new perspectives of China's contemporary urban experience.

Those changing perspectives value complexity, and more direct links to the amenities of city-wide and adjacent sites' amenities and systems. It also emphasizes creating alternative paces of experience for city dwellers, offering design that encourages a strollable urban experience, something uncommon in China's densest areas.

Mixed-use, like all redevelopment, also offers the opportunity for a reframing of existing site conditions, as seen in the treatment of a perspective created at Suning Chendgu Plaza, discussed here, which now showcases a historic building at its northern edge, reifying it as a symbol of historic significance and showcasing its new relationship to China's mounting pace of consumption, economic growth, and sophistication. Far from utopic or pure, as recent literature on mixed-use and other developments has criticized¹, both the Beijing Chaoyang Master Plan and the retail-driven mixed-use development Suning Chengdu Plaza, presented here, seek to integrate the activity, nuance, and experience of their sites' adjacencies and unique conditions to create a rich complexity of experience and architecture.

Specifically, these two projects reflect positions that value humanity, sustainability, and cultural relevance as design values by:

1. Creating places that offer a new pace and different means for users and pedestrians to experience the **humanity** of urban space, contextual to both space and time, specifically to the milieu of China's burgeoning economy;
2. Focusing on **cultural relevance** as a design value and clearly manifesting its importance in design, and planning choices; and
3. Integrating **sustainable design strategies** at many scales – site, building, and intra-building.

Here, we will examine those three strategies as manifested in two mixed-use projects, the Beijing Chaoyang Central Business District Expansion Master Plan, and Suning Chengdu Plaza, a retail-driven mixed-use development for which design development was recently completed.

Beijing Chaoyang CBD Expansion Master Plan

The Beijing Chaoyang CBD Expansion Master Plan was designed to signify the powerful position China and its capital city occupy on the global stage of business, finance, and leadership (Figure 1). Located to the eastside of the existing CBD, the master plan covers an area just south of the CCTV Tower, bordered by Jianguo Road on the south, Beijing's third ring road on the West, and Zhenzhi Road on the east. Comprised of 15 building lots and five green space lots, the plan totals 228,150 square meters, or 22.8 hectares. The total above-ground building area is approximately 2.13M square meters.

The site features a large green belt running south-north—specified as part of the broader-scaled master plan of which this builds upon. This master plan and its architecture not only observe but leverage this green belt. This plan also connects to the subway's Line 1 and Line 10 station to further encourage transit-oriented development (Figure 2).



Figure 1. Rendering, Beijing Chaoyang New CBD

Site and Design Challenges

Site and design challenges include:

1. Encourage interconnectivity between the area of this master plan and the sites and transportation modes surrounding it.
2. Maintain a 24-hour livelihood and activity on the site, despite a precedent of a drop in activity after business hours in the adjacent business district.
3. Employ tactics to link the area to cultural amenities.

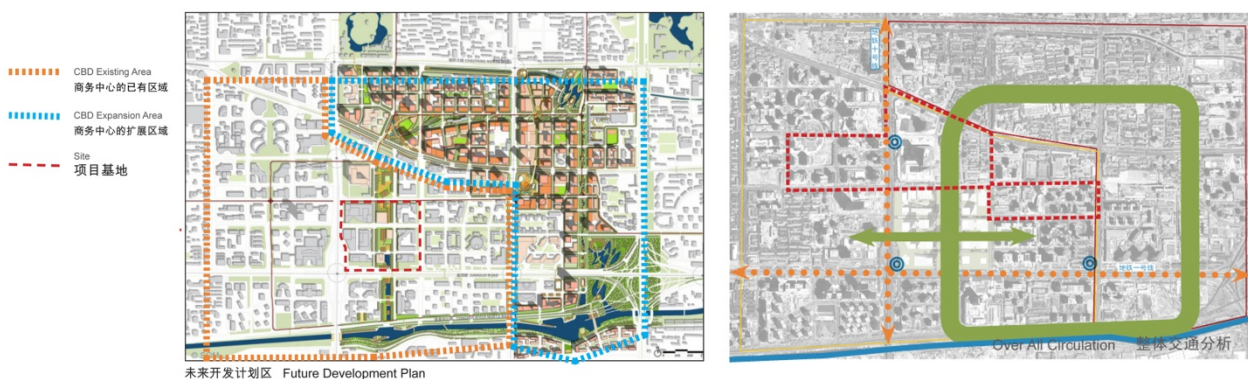


Figure 2. Future Development Plan: Red is the CBD Expansion Area;
Orange is the Existing Area. Blue is the future expansion area.

Figure 3. CBD Connection Diagram.

Design Goals and Solutions

The design seeks to create a memorable, sustainable, identifiable, easily accessible, and culturally relevant destination within Beijing's CBD, and to provide more connections to existing public transportation modalities. Besides the subway connections, as well as the city bus terminal along the west side of property, the design



Figure 4. Master Site Plan.
Figure 5. Section of site adjacent to tower.

direct connections via pedestrian bridges, allowing pedestrians to cross from one area, across the road, to another.



Introducing diverse functions to the site is also a priority², integrating a complexity of systems and multiple uses of space. Currently, adjacent sites support the functions of business and office workers during workday hours, but activity quickly wanes in the evening. With a well strategized mix of corporate office, retail, hospitality, entertainment and many public green spaces—particularly through the integration of cultural and entertainment elements into the planning such as a central ice-skating plaza, a central sculpture park, amphitheater, and museums, as well as food and beverage amenities to support them—this destination will draw people 24 hours a day. Its central park creates a gathering place for the whole community, linked to all other amenities both below- and above-ground (Figure 4, 5).

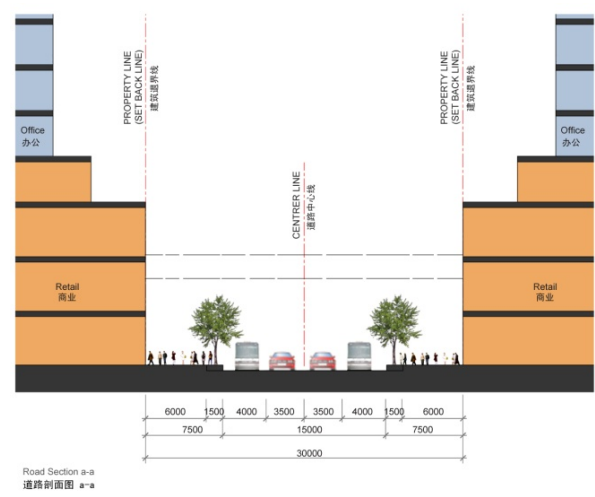
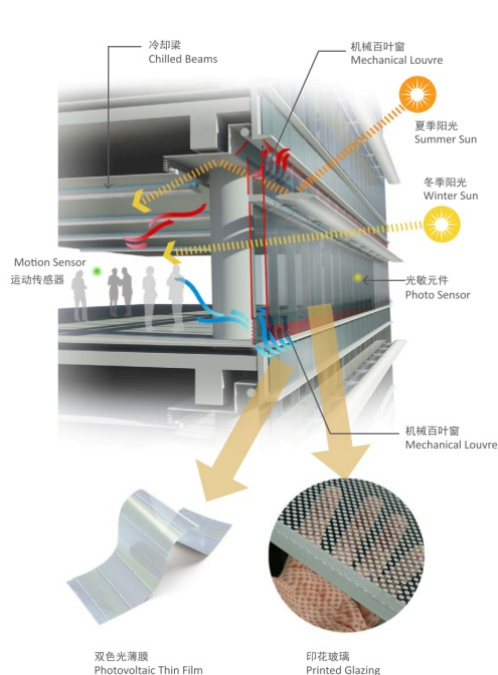
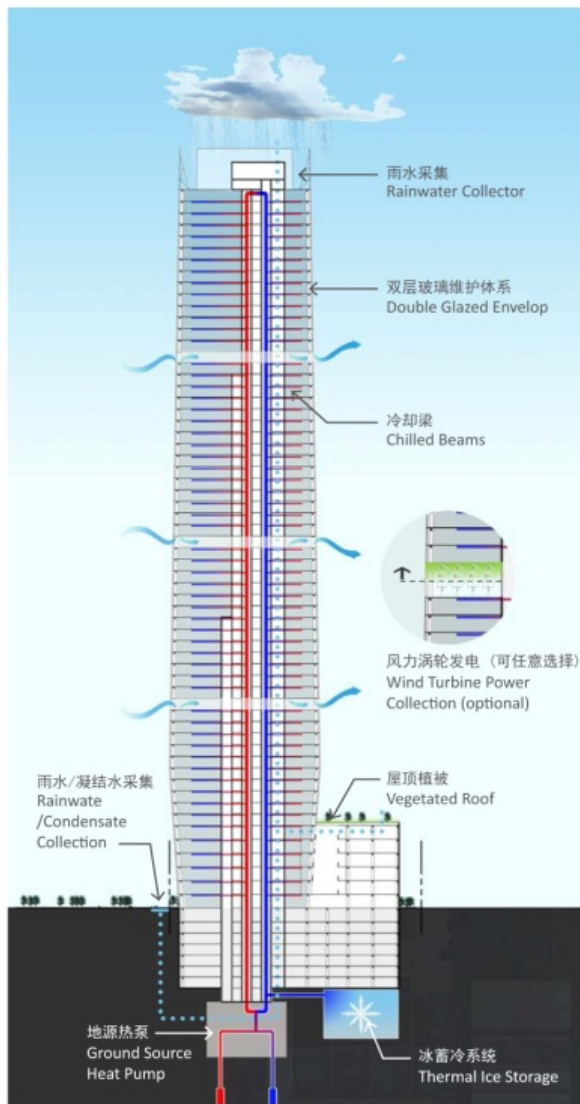


Figure 6. Plaza, green belt, multiple levels of access, and iconic tower.
Figure 7. Section of street, building profiles, and pedestrian bridges.



The design also embraces the surrounding area by extending physical and visual connections to the rest of the CBD. The iconic tower anchoring the north end of the site becomes a recognizable landmark and beacon for navigation. The central green belt passes through the tower's grand glass lobby as an inherent part of the overall city master planning effort. Retail at the site's basement level are connected between parcels via sunken courtyards, which not only provide daylighting to the basement shopping experience, but also provide direct access to the park above (Figures 6 and 7).

A comfortable street scale has been carefully considered for pedestrians. Each of the site's buildings offer three or four levels of above-ground retail, and each building's retail podium sets back from the street between five and seven meters, depending on the width of the street. As buildings ascend, the towers' set back from the street increases. This will not only reduce the visual pressure toward the street, but encourage more daylight penetration while providing roof gardens at each block (Figure 7).

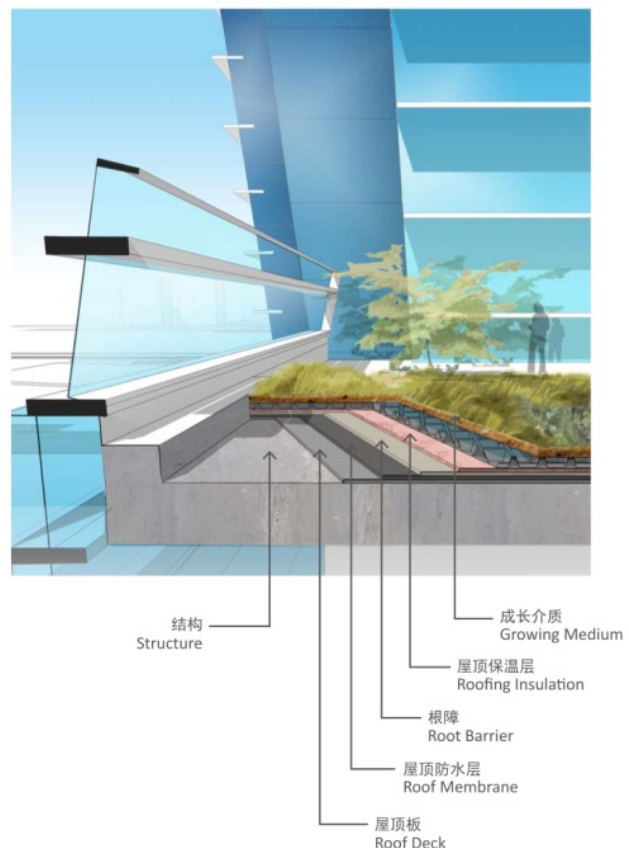


Figure 8. Curtain wall sustainability features and chilled beams.

Figure 9. Sustainable strategies building analysis.

Figure 10. Curtain wall elevation.

Sustainable, Safer Building Strategies that Enhance the Humanity of Urban Life

Strategies at both the scale of the site and scale of each building incorporate sustainable design.

The programmed mix of uses and strong connections throughout the CBD guarantees a vibrant environment while the large park counterbalances urban density and reduces the heat island effect tremendously, for better air quality, a more consistent climate, and less light pollution. The proposed light rail system will reduce traffic volume and air pollution while providing a safe and convenient CBD.

In contrast, at the building scale, sustainable strategies for Parcel Z8 focuses on practical measures of energy reduction and building performance. The intent, however, is to create a more humane working environment that increases productivity and employee comfort while improving rates of attraction and retention for the corporation. (Figure 8,9)

Energy reduction measures seek to relieve the electrical grid during peak hours and eliminate the building's vulnerability to blackouts by means of:

- interchanging the cueing of HVAC systems to off peak hours,
- harvesting energy from sun and wind,
- regulating temperature via hydraulic systems,
- implementing automated high performance glazing systems with aesthetic sun shading,(Figure 10)
- setting controls for occupancy and daylight monitoring, and
- collecting rain and condensate gray water to reduce demands on municipal infrastructure (Figure 11).

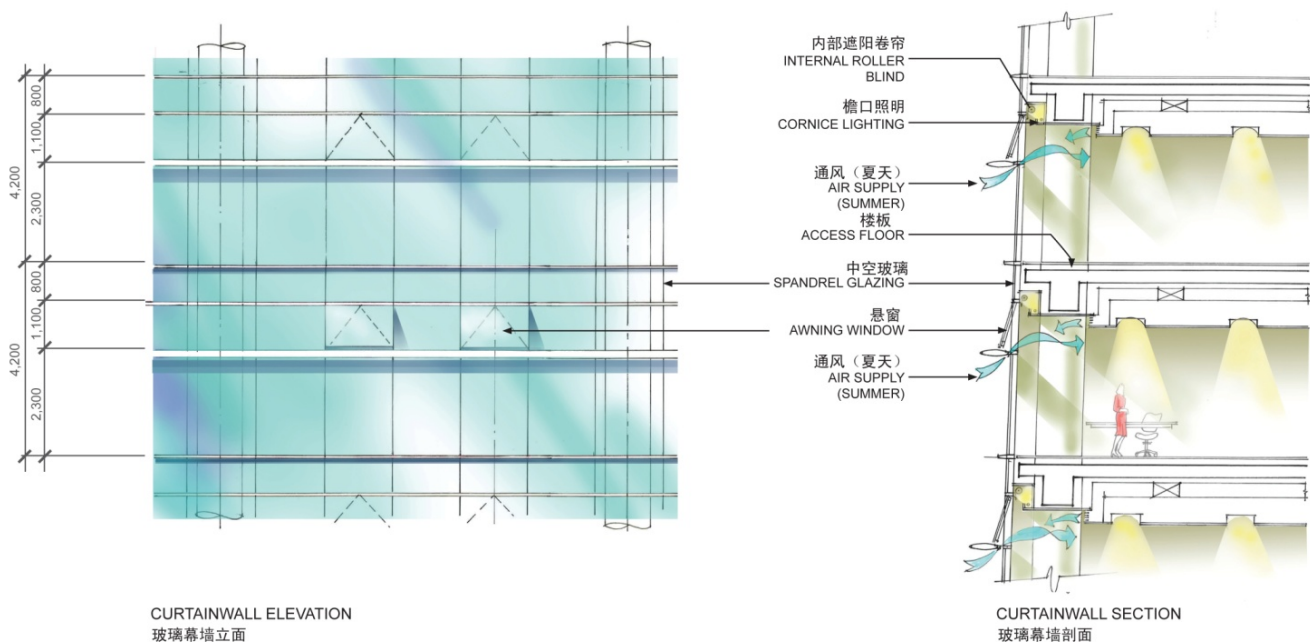


Figure 11. Green roof section.

Suning Chengdu Plaza, Chengdu

MulvannyG2 Architecture won an international design competition for the design of this mixed-use commercial development in the heart the central business district of Chengdu, China. The 185,000 square-meter development will include a 203-meter tall, 45-story tower comprised of a 5-star hotel and corporate offices, set upon a 12-story podium, which will include world-class as well as local, boutique-scaled retail. The design considers desirable retail planning and leasing strategies, hotel entry and egress, energy efficiency, and the economic, historic, and cultural significance of the site.

Design Challenges:

1. To place a major mixed-use development within a fairly small site with only one location—the site's northeast corner—for vehicle access and drop-off.
2. The northern edge of the site is home to several historic buildings, requiring a greater sensitivity to the interpretation of context.
3. Create a successful retail destination that advances the client's brand while accommodating all retail programs in a 10-story vertical center.

Design Goal:

To create a world class urban landmark amid Chengdu's skyline as well as a retail destination that signifies luxury, history, contemporary culture, and comfort to provide an experience that encourages shoppers, office workers, hotel guests, and tourists to linger (Figure 12).

Components of the architectural and planning solution: Interpreting Chengdu's historic and cultural precedent

Inspiration for Site Planning and Building Form

Curvilinear forms long associated with the city's history and culture inspire the design and planning for Suning Chengdu Plaza. For instance, Chengdu's city logo and city flower share a natural and dynamic exterior contour.

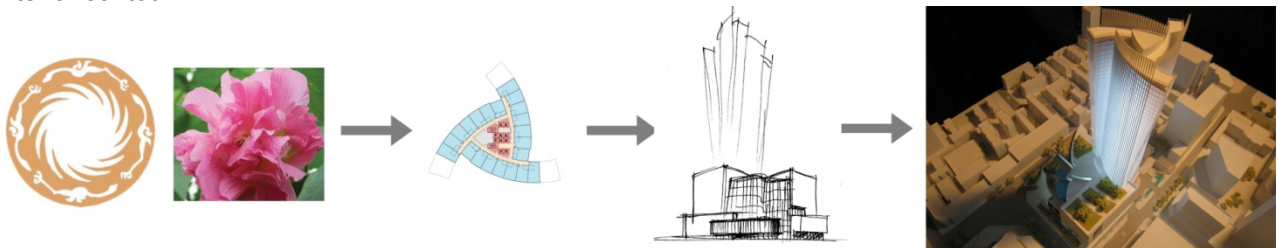


Figure 13. Tower Design inspirations

First, pertaining to the Chengdu's logo, its form is derived from a symbol of a golden craft from Jinsha Relics, circa 611 B.C. Secondly, the precedent of Chengdu's city flower and longtime designation as "the City of Hibiscus" began 1,000 years ago. Emperor Meng Chang, Late Shu Dynasty (934-965) harbored an affinity for the flower, which led to his order for all residents to plant hibiscus citywide.

As the city logo and city flower offer both symmetry and dynamism, likewise the design of the tower and podium for Suning Chengdu offer these characteristics, too (Figure 13). The tower also features an effective structural system, including an inner concrete core, exterior framing of concrete columns embedded with H steel inside, plus outriggers at four refuge/mechanical levels.

Indeed the arc-shaped exterior walls enable two-thirds of the luxury hotel/office tower's rooms and suites to face the most coveted orientations: southwest, south, and southeast. The plan and forms of the tower

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Figure 12. Rendering from southwest corner.



Figure 14. Existing Surrounding Context.



Figure 15. Site Plan.



Figure 16. YMCA site, at left.



Figure 17. Night view at SW corner

embody the aesthetic features and elements of city symbol and city flower, including an aesthetic that strikes a balance between dynamic and static.

Respond to the context of varying site conditions and scales

Design on a human scale is reflected three important site conditions adjacent to the development: vehicular and pedestrian traffic, contextual scale, and historic significance.

Designed for access. The design provides retail access from every site facade, with entries catered to each side's scale, density, and patterns of foot traffic. Meanwhile, despite a site that is pedestrian-only on three sides, the design optimizes hotel access for both vehicles and pedestrians. A sunken plaza offers an additional retail entrance that directs pedestrians to sub-grade retail and away from the hotel, allowing greater vehicular access to its porte cochere.

Contextual scale and historic significance. The development's exterior treatment tempers the development's massing to respond to the context of its adjacencies, from historic buildings to civic plazas. For instance, dark gray terracotta panels at the lower level of the retail podium mediate the scale of adjacent historic and residential buildings.

Grand civic living room to the southwest. The development offers a strong connection to Zhongshan Square, an important "living room" for the city (Figure 14). The project's main retail entrance is located at the southwest corner of the site, next to the Square, where retail flow is most intensive. The glass entry invites while the Square's same pavement material extends into the shopping experience.

Smaller-scaled, historic buildings to the north. The Y.M.C.A. building, situated north of project site, is a delicately designed, traditional Chinese-style villa (Figure 14). Our master planning, of course, preserves this building, and also reserves a parcel facing ZhengKeJia Street as a city square, enabling the Y.M.C.A building to be now be exposed to the public in a more direct way, offering it new significance as the focal point for a new, smaller scaled town square (Figures 15 and 16).

Creating the Synergy of a Destination

Integrating hotel, office, and retail among a complexity of site conditions is an opportunity to create not only a collection of many functions, but a destination. Garden terraces, a sunken plaza, and hallmark entries compliment the scale and significance of nearby civic and retail amenities. The development is designed for excitement, drawing visitors and consumers as a destination. The design strategically routes pedestrian traffic while innovatively integrating Chengdu's new and existing economic scales while the retail podium's material, color, form, outdoor roof decks, and LED lighting create visual intensity, day and night. The curvilinear and transparent glass wall at the main southwest corner reveals the shopping and cultural activity inside (Figure 16).



Figure 18. Rendering, emergency access alley

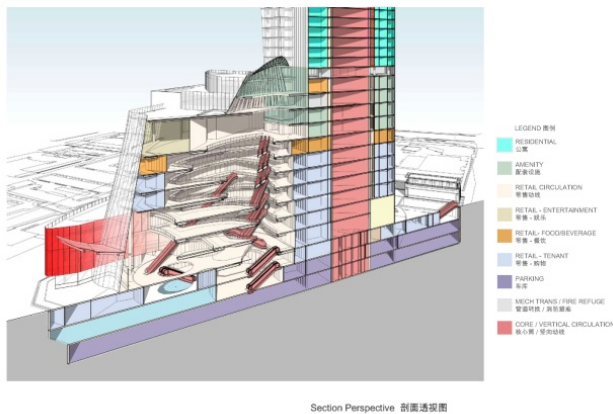
Retail Planning and Design

Designed for world-class retail. Along three perimeters of the site, Chengdu's most prominent retail address will offer leased space to world-class retail and lifestyle-focused anchors. The podium's design accommodates the spatial and floor plate requirements for these retailers' brand stature. Floors two through eight of the podium will feature specialty stores, restaurants, a cinema, and an ice skating rink, all vertically connected via a central atrium that fills the space with natural light (Figure 18).

Designed for community-based retail. Another scale of design provides new accommodations for the site's local retailers temporarily displaced by this new development. Our designers' opportunistic insight resulted in an intimate,

pedestrian-scaled shopping experience crafted from the alley-scaled access road required for emergency vehicles. This retail experience is adjacent to similarly scaled historic buildings along the site's northern edge, and reflects the traditional shopping experience at local market streets (Figure 18).

Designed to leverage proximities and real estate value. Considering the great depth of site, store planning and circulations, there are two atria connecting the retail floors. The atria not only bring in great natural light and create a healthy and comfortable shopping environment, but also act as the hub of vertical traffic, with escalators, stairs and elevators located in close proximity (Figures 19 and 20).



Section Perspective 剖面透视图



Figure 19. Retail planning.

Figure 20. Retail Atrium Space.

To increase the development's business value and liveliness, both basement floors feature retail facilities, taking advantage the high volume of pedestrian shoppers in the vicinity. In addition to the atrium and plaza entry escalator connections, a sunken plaza on the northeast corner of site not only increases the natural lighting of basement retail, but offers convenience to consumers; indeed the B1 retail level is highly connected with the existing Chunxi Retail fabric. Likewise, B2 is a supermarket, connected with above-ground levels via center atriums that provide natural light. Notably, the hotel's lobby and other hotel amenities are located at the 9th floor rather than at street level to allow for larger column-free spaces for hotel ballrooms and meeting spaces while reserving the space of the highest commercial value—the street level—for high-end retail.

Sustainable Design

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Sustainable design strategies have been carefully examined and adopted considering the client's business strategy and the local environment.

Tower. The 45-story tower's triangular shape with three overlapping and curved curtain walls, allow two-thirds of the tower's offices and rooms to receive some degree of southern exposure in Chengdu's generally temperate and overcast climate. This is considerable compared with only 50% exposure for a typical, rectangular tower. The tower's siting also leverages panoramic views of Chengdu and the region, including vistas of Himalayan foothills to the west, and city views to the south, north, and east.

Podium. The design incorporates green roofs and gardens as the podium's profile ascends. These outdoor spaces include terraces for dining and outdoor spaces for shoppers. Green roofs also offer the sustainable benefits of storm water runoff absorption and roof insulation.

Site Planning. Orientation, wind direction, sunshine, and stormwater management are important considerations in sustainable design. In view of Chengdu's generally overcast and temperate climate, the tower's transparent glass maximizes natural lighting and ventilation, while rainwater harvesting provides gray water for site irrigation.

A diversity of planting methods, including ecological green land, wall greening, roof greening and vertical greening, provides a mix of plants to create a complex ecological structure that retains soil and water, tempers both climate and noise, and reduces pollution.

Systems Design. The carefully considered building orientation works with an analysis of energy consumption with an aim to reduce energy use by more than 60%. A systems design integrates strategies for natural ventilation, sunlight control, air conditioning, and day lighting. A curtain wall system includes low-e insulated glass and operable windows, self cleaning building façade materials, and vertical fins that reduce glare and thermal penetration.

Also, ice storage air-conditioning works with closed-loop radiant heating and cooling systems, including heated slabs and chilled beams, to reduce energy consumption. Narrow floor plates allow for efficient cross-ventilation. Those, combined with operable windows, reduce the building's cooling load. The building also features a green roof, lighting roof air tempering system, intelligent lighting system, ecological permeating floor. Gray water collection—rainwater harvesting and the reclamation of air conditioner condensation—enables non-traditional water resources to comprise 30% of all water usage for the development. Building materials are locally sourced, reducing CO₂ emissions in delivery.

Conclusion

Based on humanistic needs, sustainable design, the interpretation of cultural relevance, and a logical programming mix, the above designs explore the spirit of mixed-use development while respecting and showcasing the history and culture in these landmark developments.

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