

Sustainable Urban Planning and Building for Pazhou West Area in Guangzhou

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Address 1 - street : 510220 ,

Population : 180 000

Number of jobs : 150 000

Starting year of the project : 2014

Delivery year of the project : 2019

Key words : Compact, intensive, efficient, composite



211.5

Certifications :

ID CARD

Pazhou West Area won the Sustainable District Grand Prize at the China level and a mention for the international Sustainable District Grand Prize of the 2019 Green Solutions Awards.

Weizhou West District is located in Haizhu District of Guangzhou City, with a total area of about 2.1 square kilometers. It is an important part of the "Golden Triangle District" of the central city. The urban design and control optimization of the Pazhou West District and the regional city chief designer system were approved and approved by the municipal government on February 2, 2016. The plan adopts the development concept of "compact, intensive, efficient and complex", adopts the "narrow road dense network" planning mode, and compactly develops and actively improves the land use efficiency. After the urban design and control regulation optimization, the total building area has increased by 846,000 m2. The original control regulations increased by 17.4%, while the green water area increased by 3.8 hectares, which was 9% higher than the original control regulations. It increased the efficiency of land use while safeguarding the public interest and became a representative case of intensive compact urban design.

In terms of management, the **introduction of the regional urban chief designer system, which** is the first in China, and the construction plan control and supervision that is involved in the planning and management of each stage in advance, provides a good platform for the refined and quality urban design, urban construction and management. Refined and quality urban management. Give certain flexibility to the building height and building density of the development plots, and the fluctuation of the height and density of the building as an incentive measure for the contribution of the regional public interest. When the building in the local block uses green building technologies such as solar photovoltaic and three-dimensional greening, the building height, Building density indicators are given priority to obtain permission to upgrade.

In terms of quality of life, the **current river water system and natural water surface are preserved, and the park green space square is combined to create a vibrant place.** The optimized functional structure emphasizes the mixing of functions and increases the public service facilities that are beneficial to the vitality of the community. Adhering to the development concept of small blocks, we will increase the positive interface along the street and strengthen the construction of the block.

Bus priority, increase the number of subways and buses, the track station 800 meters coverage rate reached 90%.

Economically, the Internet industry will be introduced, and an Internet innovation cluster will be built to realize a "resource-saving and environment-friendly" innovative industrial zone.

In terms of resource protection, urban design and ecological protection are closely combined, and the original water body area of more than 2 hectares is retained and effectively utilized to achieve low-impact development and achieve a win-win situation between environmental benefits and economic benefits.

In terms of energy, it advocates reducing the use of traditional fuels and promoting the use of renewable solar energy such as solar thermal photovoltaic technology and freshwater source heat pumps.

High-level green indicator requirements: propose low-carbon ecological indicators in the block and green building technology system of the plot, and impose mandatory control and guiding content on construction, transportation, energy utilization, resource utilization, and ecological environment, **and clarify green construction in the conditions of land transfer. Samsung's mandatory requirements,** along with other green low-carbon requirements, will guide the construction and operation of low-carbon areas.

Programme

- Others

CO2 Impact

CO2 Impact : 35 711 CO2

Method used to calculate CO2 impact

CO2	GB/T51366-2019 4.1 IPCC2006	2017	35711.25 CO2 CO2
	65448790 kwh CO2 35711.25		

Project progress

- Delivery phase

Prescriptions and zoning

- Mountain area regulation

Key points

- Governance
- Economic development
- Smart city

Approaches used

- Others

Certifications

- Autre

Data reliability

3rd part certified

TERRITORY

Type of territory

Weizhou West District is located in Haizhu District of Guangzhou City, with a total area of about 2.1 square kilometers. It is an important part of the "Golden Triangle District" of the central city. The urban design and control optimization of the Pazhou West District and the regional city chief designer system were approved and approved by the municipal government on February 2, 2016. The plan adopts the development concept of "compact, intensive, efficient and complex", adopts the "narrow road dense network" planning mode, and compactly develops and actively improves the land use efficiency. After the urban design and control regulation optimization, the total building area has increased by 846,000 m². The original control regulations increased by 17.4%, while the green water area increased by 3.8 hectares, which was 9% higher than the original control regulations. It increased the efficiency of land use while safeguarding the public interest and became a representative case of intensive compact urban design.

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KEY FIGURES

Green areas, roofs included

Green areas, roofs included : 712 423 m²

Public spaces area

Public spaces area : 199 695 m²

Office floor area

Office floor area : 735 875 m²

Commercial floor area

Commercial floor area : 37 273 m²

Public facilities floor area

Public facilities floor area : 4 310 m²

Housing floor area

Housing floor area : 602 912 m²

Refurbished floor area

Refurbished floor area : 7,56

Number of residential units

Number of residential units : 5 880

Green spaces /inhabitant

3.96

Public spaces/inhabitant

1.11

Total investment costs (before tax)

Total investment costs (before tax) : 21 000 ¥/m²

GOVERNANCE

Project holder

Name : Guangzhou Planning and Natural Resources Bureau

Type :

General description :

In November 2014, according to the requirements of the Guangzhou Municipal Government, the Guangzhou Municipal Planning and Natural Resources Bureau organized the urban design optimization work in Pazhou West District. In June 2015, the urban design and control optimization of the eastern section of Pazhou Avenue in the core area of Pazhou West District (ie Pazhou Internet Innovation Cluster) was approved by the municipal government. In February 2016, the urban design and control regulation optimization of Pazhou West District was approved by the municipal government. by.

Project stakeholders

Guangzhou Land Development Center

Function : Other

In order to cooperate with the development and construction of the western part of Pazhou, the Guangzhou Land Development Center carried out land transfer work in accordance with the results of the regulations approved by the municipal government. In June 2015, 19 plots in the core area of Pazhou West District (ie Pazhou Internet Innovation Cluster) began to be sold; in February 2016, 19 plots outside the core area of Pazhou West District began to be sold. As of December 2018, 38 sites have been sold in Pazhou West District.

Guangzhou Haizhu District Land Resources and Planning Branch

Function : Other

Responsible for the administrative approval of the land block construction plan, and regularly organize the business to communicate the construction of land parcels and promote the construction of each development land.

Administration Committee of Pazhou Exhibition & Convention, Headquarters and Internet Innovation Industry Cluster, Guangzhou

After the transfer, the development unit actively promotes the design and implementation of the single block design, and establishes a multi-party communication and coordination platform with the regional urban chief designer team, plot and land design team to promote the construction of the plot and guarantee Regional public interest and spatial quality. Optimize the project construction approval process and accelerate the project construction progress. Implementation of the construction approval procedures in parallel approval, integration of approval data and processes, reduce repeated submissions, parallel inspection and approval of construction engineering construction permits, construction drawing design documents, etc., reducing the processing time from 25 working days to 3 working days. At present, the project construction is progressing smoothly. Global, Vipshop and Alibaba have been capped, and the curtain wall, fire protection, electromechanical installation and internal hard decoration are being promoted simultaneously; the main tower and small tower of Fosun South Block have been capped, and the North Block The main tower is built on the 28th floor of the ground, and the small tower has been capped; Xiaomi is carrying out the construction of the main tower on the 4th floor and the construction of the small tower-1 floor structure; Gome Information is carrying out the construction of the main tower on

the 14th floor, and the podium floor is built on the 3rd floor; Bangdong Tower is built to the 5th floor of the ground, and the West Tower is built to the 4th floor; Tencent, City Federation of Industry and Commerce, Pengrun, Huanju Times, TCL, Guangdong Media, Yueke Finance, Kangmei Pharmaceutical, Keda Xunfei to promote underground structure construction; The publishing media is about to start the excavation work of the foundation pit; Sany Heavy Industry, Shugen Internet and Zhujiang Industry are working on the design of the building plan; COSCO Haisan has obtained the construction project planning permit and is in the process of general contract bidding.

South China University of Technology

Function : Architecture agency

Responsible for urban design optimization and overall coordination of control regulations, formulate urban design guidelines, plans, plot design points and planning management documents, assist planning authorities to develop plot transfer conditions; as a regional urban chief designer team on plot construction The design proposal proposes review and provides technical consultation and review services for the planning management department to ensure regional construction quality and public space benefits.

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Guangzhou Urban Planning and Design Institute

Function : Architecture agency

Responsible for the status quo basic research and control document preparation.

18602020276 583986375@qq.com

Alibaba Network Technology Co., Ltd.

Function : Developer

Responsible for plot construction

13922200940 sailei.zw@alibaba-inc.com

Guangzhou Huanglong Information Technology Co., Ltd.

Function : Developer

Responsible for plot construction

18038829988 zidong.cai@xyre.com

Fosun South Headquarters

Function : Developer

Responsible for plot construction

18666097980 heyuanheng@forte.com.cn

Guangzhou Vipshop Data Technology Co., Ltd.

Function : Developer

Responsible for plot construction

13798170758

Guangzhou Dingshang Company Limited

Function : Developer

Responsible for plot construction

13802741344

QUALITY OF LIFE

Quality of life / density

Mixed use: Increase the **mix of** business, business, and residential functions, including 25% of commercial functions (including staff quarters), and create a 24-hour city center.

Encrypted road network: Actively increase the density of branch network. The overall road network density in Weizhou West District will reach 12.1km/km2, creating a design demonstration of the small road network in Xiaojie District, increasing the convenience of residents' transportation.

Increase public transportation facilities: Metro, tram, bus public transportation system will cover the entire planning area, the subway station 800 meters coverage rate of 90.7%, bus station 500 meters coverage rate of 100%,

Increase public service facilities: Actively increase the convenience service facilities such as government centers, supermarkets, nurseries, pharmacies, health stations, and affordable catering. Each new plot has more than three public service facilities to improve the quality of life of residents.

Strengthen the construction of places and landscapes, take the main street Weizhou Street as the skeleton, combine ecological elements and human elements, and actively create a dynamic humanities place. The users of the area can reach public green space or squares within 300 meters.

Net density

-0.03

Culture and heritage

Guangzhou Zhujiang Brewery in the northern part of Pazhou West District was completed and put into operation in 1985. The factory has preserved industrial structures such as malt silos, fermenter structure, Zhu Beer Museum and the former site of thermal power plant. It is an important cultural clue in the area.

In order to avoid the blind demolition of the industrial buildings left after the relocation of the Zhujiang Brewery, resulting in waste of resources and loss of features, the urban design will carry out the public space reshaping and diversity function planning by combing the overall structure and space texture of the plant area, and the original industrial characteristic industry. The buildings are centrally reserved, and the individual buildings and facilities are transformed and reused by means of new and old ways. Partial reservations have also been made to the characteristic industrial structures, and the park green space has been upgraded to become a dynamic area combining green space park, culture and art, creative office and leisure business, and the memory of the site features is preserved.

Social diversity

Retain the diversity of the residential community . Retain the current residential community and set up a relocated house to retain local residents. The existing residential area is about 5,880. Set up multiple talent apartments to attract diverse talents.

The construction of staff quarters attracts technical talents , and each development plot allows the allocation of staff quarters with a total floor area of 15% to meet their living needs.

Attracting innovative enterprises, according to the "Measures for Accelerating the Construction of Innovative Island in Guangzhou Haizhu District" promulgated in 2019, attract and reward innovative enterprises.

Create a vibrant leisure venue, upgrade the bar street, the Zhu Beer Museum, place cultural venues such as galleries and exhibition halls, and experience commercials such as cinemas. Now the average monthly traffic reaches 100,000 people and settles in merchants. More than 300, more than 500 rental booths, more than 100 special events held; Pearl River Beer Museum as a science education base, rich in functional diversity. The riverside area has become an active and pleasant leisure place.

Social inclusion and safety

The arcades and public corridors are set on the ground of the newly built blocks, and the air corridors and public spaces in the buildings are installed on the second floor. They are open to the public and connected to each other for 24 hours. They are open to the public in terms of control, land use conditions, construction permit and publicity. Public space is clearly defined. The regional chief division team cooperated with the planning management department to review and implement the total length of the regional riding building over 2000 meters, with an area of over 12,000 square meters and a second floor corridor with more than 1600 meters.

Public facilities such as nurseries, e-commerce exhibition halls, cultural stations, etc., which integrate science education activities, are set up in new plots and are open to the public. One policing and no less than 10,000 square meters of open space are set within 500 meters to meet regional public safety requirements. The single-built underground public space is connected with the underground space of the development plot, and the underground vehicle traffic dismantling channel is set up. At the same time, it can be used as an underground emergency evacuation passage to meet public safety requirements.

The newly-built plots meet the flood control standards for the first time in 200 years, and use the rivers and floodplains to store floods and floods to cope with rain and flood.

Ambient air quality and health

Improve the level of landscape greening, purify the air, dust and sterilization, maintain the balance of carbon and oxygen, improve the atmospheric environment in the region, and improve the physical and mental health of the human body. Exhaust emission activities are controlled by reducing emissions sources in the area, rationally planning the location of emission sources, and making harmless treatment of exhaust emissions. Set up a dust can lid that can be opened and closed to prevent the escape of malodorous gas generated by garbage and mosquito breeding. In the process of garbage collection, transportation and stacking, the garbage should be sealed as much as possible, and effective measures should be taken to prevent the odor from escaping. Take effective measures to control and control the construction dust in the area. Set real-time collection and monitoring of atmospheric air pollutant concentration and publicize air quality.

Perform acoustic environment functional zoning, and arrange noise-insensitive non-residential buildings, such as commercial buildings, on both sides of the traffic trunk line in the community, and the residential buildings are arranged away from the main traffic line; or greening between the two sides of the traffic trunk line and the residential areas Isolation belts, community parks, etc.

ECONOMIC DEVELOPMENT

Local development

Through the **Internet's innovative agglomeration** , in 2017, **Haizhu District** achieved an operating income of 11.973 billion yuan **in information transmission, software and information technology services** , **making it the fastest growing industry in the region** . In 2018, the enterprises in Weizhou West District achieved a total operating income of more than 18 billion yuan.

Pazhou West District has successively introduced a number of Internet headquarters companies such as Alibaba, Tencent WeChat Headquarters, Keda Xunfei, Xiaomi, Vipshop, etc., accounting for 14% of the top 50 Internet companies in the country. It is the highest concentration of Internet Top 100 enterprises in Guangdong Province. One of the regions. Pazhou West District has attracted 30 Internet corporate headquarters. It is estimated that by 2025, the number of upstream and downstream core affiliates will be no less than 600.

Encourage the creation of a new space for multi-functional composite industrial clusters of "shared innovation platform + enterprise community + intelligent testing and display experience platform" to promote industrial interaction. Participate in the joint construction of industrial platforms in Guangdong, Hong Kong and Macao, and promote the cross-border flow of scientific and technological factors. Create a cultural and creative industry in the region.

% of public spaces

9

% of office area

35

% of commercial area

2

Circular economy

The Pazhou region has built an industrial system dominated by exhibition economy, digital economy and headquarters economy, and supported by modern service industry. In the future, through the mutual linkage of industries, a multi-directional and innovative industrial ecosystem will be formed.

The main industries in Pazhou West District are e-commerce platform industry, internet communication and social platform industry, intelligent manufacturing and application industry, comprehensive investment project industry, "Internet +" big health industry, cultural media industry, accommodation and catering industry, culture and entertainment industry, culture. Creative Industry. Among them, the intelligent manufacturing and application industry will **promote the development of circular economy through technological innovation**. By building a smart logistics test area, we will support e-commerce and logistics leading enterprises to establish a business intelligence big data system that integrates suppliers, logistics and customer information, **and realizes the enterprise circular economy through e-commerce gathering and optimization of management and sharing platforms**.

TRANSPORT

Mobility strategy

Encrypted road network: Actively increase the density of branch network, increase the selectivity and convenience of traffic. The overall road network density in Weizhou West District will reach 12.1km/km², creating a design demonstration of the small road network in Xiaojie District.

Increase public transportation facilities: Urban design is more than two new subway lines, one LRT ring line and two water bus terminals and seven bus terminal stations. The intersection of three subway lines will create an integrated interchange hub. Two water bus terminals, Binjiang three-dimensional park and bus terminal station form two traffic transfer nodes. The three-level public transportation system of subway, tram and bus will cover the entire planning area, providing efficient and convenient public exchange.

Reasonable control of the number of parking spaces for cars in the block: After the urban design and control optimization, the parking ratio of the newly built blocks is controlled to 0.48 poise/100m² in principle, and the number of parking lots allocated to the development of adjacent subway stations is controlled at 400. And below. All newly developed plots require a charging pile with a total parking capacity of 30%.

SMART CITY

Smart City strategy

Implement the top-level design of urban smart city, and construct the urban information management application system according to the infrastructure layer, data layer, platform layer and application layer. The infrastructure layer is the Internet and Internet of Things infrastructure for monitoring and transmitting data; the data layer is 3DGIS+BIM-based spatio-temporal big data, urban public basic data and other professional data; building urban three-dimensional green ecological public information platform, analyzing urban area The green ecological situation; the application layer includes 7 major systems, including planning and construction of information management systems, mainly for planning and construction of urban form and style management, urban overall construction progress, safety, quality management, etc.; energy and carbon emission information management system Effectively control energy supply and energy consumption; public safety systems are used to monitor urban areas, receive alarms at the grassroots level for daily management, disaster prevention command and emergency response; environmental monitoring information systems are used for urban gas, water and soil Real-time monitoring and management of acoustic environment; water information management system is used to ensure water security and stormwater management in urban areas; road monitoring and traffic management information system is used to effectively support citizens' smooth travel; parking management information system is used for parking lot/library Management of operational information. The above systems are all connected to the city-level professional information system.

The urban information and communication service facilities are perfect, the coverage rate of wireless networks in public areas is over 95%, the fiber-to-the-home ratio of residential buildings is over 90%, and the information and communication infrastructure of public buildings is perfect.

RESOURCES

Water management

Retaining the river water system: the overall design of the greening and water body in the western part of Pazhou. Through the preservation and reconstruction of the horticultural field, the original water grid bureau of the base has been preserved and the ecological characteristics have been continued. The urban design is optimized to restore the river length to 940 meters, and the concentrated natural water surface area is about 14,000 square meters.

Building a **sponge city**: constructing a reservoir, a water system, and a three-level water storage system for urban water surface; the rainwater supplies the river; the water system passes through the central area.

For the rainwater in the site, the outflow **control is used**, and the total annual runoff control rate of the site is $\geq 55\%$. Encourage the utilization rate of non-traditional water sources (such as municipal recycled water) $\geq 10\%$. The urban sewage collection rate is 100%.

Measures for reducing leakage rate of water supply network: Selecting pipes and fittings that meet the national standards of current products, regulating urban water supply pressure, avoiding excessive water pressure or excessive pressure difference, and planning to build a pressure control and monitoring system for urban water pipe network, reduce the leakage rate of the water supply pipe network.

Soil management

Soil nature conservation: Through the concentration of green areas, the construction of a large and dense urban spatial pattern, combined with the river water system to restore and protect the natural soil.

Wetland protection: The overall design of greening and water bodies in the western part of Pazhou. Through the preservation and reconstruction of the horticultural field, the original water grid bureau of the base has been preserved and the ecological features have been continued. Through the urban design optimization, the river length is increased by 940 meters.

Garbage harmless: Promote the construction of an environmentally-friendly sanitation integrated base that integrates many functions such as garbage sorting, sanitary landfill, biochemical treatment, and comprehensive utilization, and make full use of available resources.

Waste management

Promote the construction of environmentally friendly bases that integrate garbage collection, sanitary landfill, biochemical treatment, and comprehensive utilization, and make full use of available resources.

Looking forward to the development of related technologies in Guangzhou in the future, the Pazhou area should do a good job in the classification, collection and removal of waste.

Promote building materials and use building materials produced from waste.

Realize the reduction, harmless and resource utilization of domestic waste in the planning area, use modern advanced technology for waste disposal and comprehensive utilization, and build 3 garbage transfer stations and 1 garbage compression station. The harmless treatment rate of garbage and manure is 100%. Realize garbage recycling utilization $\geq 60\%$.

BIODIVERSITY

Biodiversity and natural areas

The plant types in the planned area are mainly landscaping vegetation, which are common species in South China; there are no large wild animal habitats, and the common wild animals are mainly birds, mammals, amphibians, reptiles and other wild animals. see.

Urban design optimization By restoring and retaining the river water system, green space concentration and rational layout, a green park with both water storage functions is formed around the river water system, and the characteristic industrial structures are retained by the pearl beer to form a concentrated green space park, and a sponge city system is constructed to form a multi-layer. Corridors and intertwined ecological corridor systems preserve the natural environment and biodiversity as much as possible in the central area of the city.

ENERGY/CLIMATE

Climate adaptation, resources conservation, GHG emissions

Adopt mandatory green building indicators and prefabricated building indicators to constrain building construction, improve building comfort and reduce resource consumption.

The main function room can see the outdoor natural landscape through the outer window, no obvious line of sight interference; the main function room has reasonable control glare measures; the adjustable shading measures are adopted; the indoor pollutant concentration exceeds the standard real-time alarm, and is linked with the ventilation system.

The building shape rules, the architectural modeling elements are simple, and there are no large number of decorative components; the public part of the building adopts the integrated design of civil engineering and decoration; the indoor space with transformable function in the building adopts the reusable partition (wall), the proportion is not less than 30%. The proportion of prefabricated components produced by industrial production is not less than 30%; the kitchen and bathroom are designed with integrated design; the weight of building materials produced within 500km of the construction site accounts for not less than 60% of the total weight of building materials; The ratio of the recycled material to the recyclable material is not less than 10%.

Energy sobriety

The buildings in the guiding area shall be designed and constructed in accordance with the three-star standard of green building. It is mandatory that all new buildings should achieve the goal of 65% energy saving compared with traditional non-energy-saving buildings. The regional renewable energy utilization rate is $\geq 10\%$. It is mandatory to increase the thermal performance of building envelopes by more than 5% than the current energy-saving design standards. Heating, The energy consumption of ventilation and air conditioning systems is reduced by no less than 10%.

The water system and air system of the heating, ventilation and air-conditioning system adopt frequency conversion technology to improve the energy efficiency level; rationally adopt the cold storage and heat storage system; implement district control and heat recovery in the building. The main functional rooms in the building are equipped with heating, ventilation and air conditioning system ends. The temperature and humidity can be independently adjusted according to actual needs to save energy. A heat exchange device is installed between the fresh air and the exhaust system for heat recovery.

Advocate the use of traditional fuels, and promote the use of renewable solar energy such as solar thermal photovoltaic technology and freshwater source heat pumps.

Energy mix

The region comprehensively adopts municipal electric power, gas and water source heat pumps, solar energy resources, and optimizes the energy load terminal level to ensure energy security and clean utilization. Specific measures include: water system for heating, ventilation and air conditioning systems, and frequency system using frequency conversion technology to improve energy efficiency and adopt corresponding hydraulic balance measures; rationally use cold storage and heat storage system to load peaks and fill valleys; encourage large public buildings The use of cold, heat and power triple-connected building systems, using natural gas as primary energy, generating heat, electricity and cold, requires energy utilization of more than 80%; encouraging Linjiang buildings, using water source heat pump technology; making full use of the summer heat and warm winter sun. The altitude is large, the solar radiation is strong, and there is sufficient solar energy resources. Photovoltaic curtain walls, photovoltaic roofs, photovoltaic roofs and solar landscapes at the connection of buildings are used to make full use of solar energy resources.

Total electricity needs of the project area /year

Total electricity needs of the project area /year : 593 585 000,00 kWh

SOLUTIONS

Description :

BUILDINGS

Buildings

A new building (Alibaba block) has obtained the LEED-CS Gold certification and the Guangzhou Construction Quality and Safety Demonstration Site.

A new building (Huanglong Block) has been pre-certified by LEED-CS 3.0 and a safe and civilized demonstration site in Guangdong Province;

1 new building (Fosun South Block) has obtained LEED Gold Pre-certification;

1 new building (Vipshop Club) is scheduled to declare LEED Gold certification;

2 new buildings (Huanglong Block, Alibaba Block) are under the green building star rating;

Two new buildings (Dingshang Block, Fosun South Block) are proposed to declare green building stars.

Contest

Building candidate in the category



