

# Overview of the Development of Design Guidance of Building Public Open Space

Ying Shi<sup>1,2,a</sup>, ChuYue Chen<sup>1,b</sup>, Ying Pan<sup>1,2\*</sup>

<sup>1</sup>School of Architecture, South China University of Technology, Guangzhou, Guangdong, China

<sup>2</sup>State Key Laboratory of Subtropical Building Science, Guangzhou, Guangdong, China

<sup>a</sup>worksy2004@126.com, <sup>b</sup>chuyue.chen@qq.com, \* panying@scut.edu.cn

## ABSTRACT

With the advancement of urbanization, the demand for public space in China is increasing. But at the same time, the carrying capacity of urban public space is insufficient. Public open space is in urgent need of transformation. Therefore, a kind of urban public space located in the interior of the building land has gradually attracted the public's attention, which we call "building public open space". Some relatively developed cities, such as New York, Tokyo, and Hong Kong, have accumulated relatively mature practical experience in construction for this kind of space. However, because the design guidance of building public open spaces in China is not mature enough, the quality of the building public open spaces that have been built is not ideal. Through case studies of New York, Singapore, Hong Kong, Tokyo, San Francisco, Shanghai, Shenzhen, this paper summarizes the practical experience of building public open space in developed cities, to provide references for the construction of building public open space in China.

**Keywords:** Building public open space; Design Guidance; The development course

## 1. INTRODUCTION

With the further advancement of urban construction in China, people have higher expectations for the quality of the urban environment. Since the 18th National Congress of the Communist Party of China, General Secretary Xi Jinping has attached great importance to urban construction. In December 2015, China held the Central Urban Work Conference in Beijing and proposed that urban construction should focus on both "construction" and "management", improve urban governance system and capacity, and solve prominent problems such as urban diseases. As an important part of the urban environment, public open space plays an important role in improving residents' quality of life and urban quality. Therefore, improving the quality of urban public open space is the key in the process of urban construction.

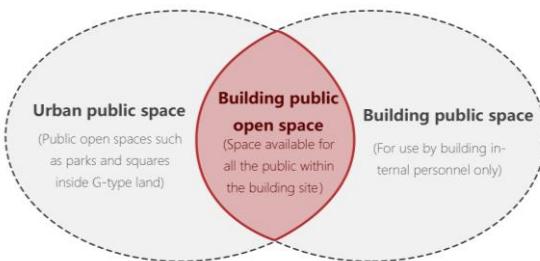
However, due to the spread of urbanization, the urban population increases, the land for large public spaces such as traditional parks and urban squares is in short supply, and the quality of space also decreases. Moreover, the distribution of public spaces such as parks and squares is relatively concentrated, with low

convenience and low mobility. The urban public space is in urgent need of more diversified and flexible transformation.

Right in the above background, a kind of public space located inside the building land and open to the public free of charge has gradually attracted people's attention, which is called "building public open space".

## 2. THE CONNOTATION OF BUILDING PUBLIC OPEN SPACE

Building public open space is a part of urban public space, which is located inside the building land and constructed by the government, developers, or individuals and is open to the public for free use (Figure 1). The distribution of building public open space is more flexible than traditional urban public space. While serving the main building, it can undertake certain urban public space functions, help to alleviate the pressure of the urban public space and it is the effective way to improve the urban public space shortage. Therefore, building public open space is gradually becoming an important existing form of public space in cities.



**Figure 1.** Conceptual illustration of building public open space.

There are many concepts similar to building public open space. Due to the differences in land systems, building public open space is also called "Privately Owned Public Space" (POPS) in New York, Singapore, Seoul, London, and Seattle; San Francisco and Los Angeles call it "Privately Owned Public Open Space" (POPOS); Toronto calling it "Privately Owned Publicly-Accessible Space" (POPAS).

In China, Hong Kong draws on the experience of New York's POPS and puts forward the concept of "Public Open Space in Private Developments". Hangzhou calling it "Subsidiary public space on land for non-public property rights" in 2006 ; Shenzhen proposed the concept of "Non-independent Public Open Space"; Guangzhou issued the *Technical Regulations on Urban and Rural Planning of Guangzhou* in 2015, calling it "Building Public Open Space".

Although the names are different, their essence is a space that is free to the public and can carry certain public activities within the scope of construction land that is privately owned or allocated, which is similar to the concept of "building public open space".

### 3. DESIGN GUIDANCE AND EXPERIENCE OF BUILDING PUBLIC OPEN SPACE IN ADVANCED CITIES

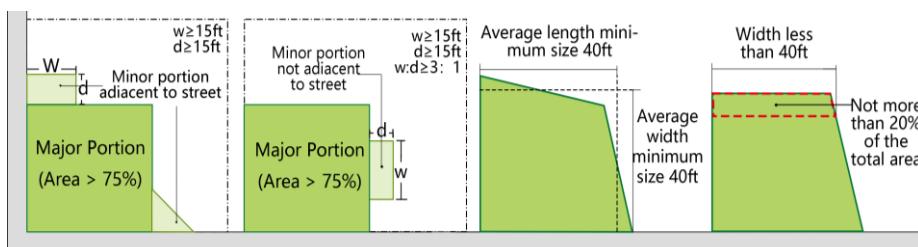
Since the 1960s, building public open space has gradually emerged in developed countries and regions. New York, Singapore, Hong Kong, Tokyo, and San Francisco have successively carried out related practices in building public open space.

#### 3.1. Design Guidance for POPS in New York

As a pioneer in the practice of building public open space, New York has the most complete design guidance and control system. Since the "Privately Owned Public Space" (POPS) was proposed in 1961, New York City has revised the zoning law several times, continuously improving the content of design guidance and control. Detailed regulations have been made in various aspects such as the reward system, design guidelines, management and maintenance.

In the reward system and approval certification, the zoning law has flexible reward standards according to different construction conditions. It also adopts a mixed approval system of restraint, certification, and discretion. The approval procedures for different types of POPS are different to ensure the rationality of the approval.

In terms of design guidelines, New York's zoning law lists 12 different types of POPS, which can be grouped into arcades and public squares. The regulations set requirements for the depth and height of arcades. In the spatial layout, the shape of the square is usually required to be rectangular, and the square is divided into main space and secondary space according to the shape and size. In order to ensure the continuity of the space, the minimum average width of the square is 40 inches (Figure 2). In addition, relevant regulations have been made for spatial visibility, sidewalks, sunshine hours, parking, and related facilities.



**Figure 2.** Schematic diagram of the spatial layout and dimensioning of the New York Public Plaza

In terms of management and maintenance, owners are required to set up a sign in the privately owned public space that indicates the available people, opening hours, owner's information, and location. and regularly submit self-inspection reports on space quality. Notice of violation will be issued if the privately owned public space is found to be not in compliance with regulations

in the later operation. In addition, the New York Government fully mobilized social forces to supervise POPS through cooperation with public welfare organizations such as APOPS. The public can also learn POPS information and express opinions on the website established by the New York Government.

### **3.2. Design guidance for POPS in Singapore**

In 1821, Singapore initiated the establishment of a 24-hour arcade on both sides of the street, which started the construction process of POPS in the local area. In 2017, Singapore issued *Good Practice Guidelines for Privately Owned Public Space* to provide detailed regulations.

According to the guidelines, before building privately owned public spaces, developers need to submit an application to the local redevelopment authority for approval before construction can proceed. The type of space, activities, and the users should be described in the submission and the design should be reflected through a series of drawings.

In the design guidelines, privately owned public space is divided into three types: city Rooms, plazas, and urban parks. It is stipulated that at least 75% of the public open space is regular, the street side of public space should have good visibility, and there should be at least two entry and exit points on both sides of the space. There are also requirements on the height difference, shading, lighting, ventilation, environmental noise, landscape to improve the comfort of public space. For example, the horizontal change of the public space should be within 600mm, and at least 50% of the public space should be in the shade between 9 a.m. and 4 p.m.

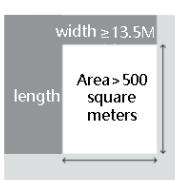
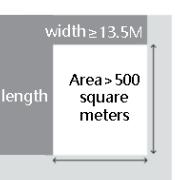
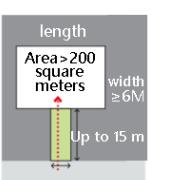
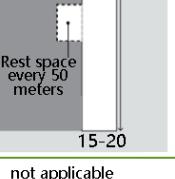
In terms of management and maintenance, the public space information board is required to be set up near the main entrance of the public space, declaring that the public space is open 24 hours a day. Guidelines for some public spaces can also be found on the redevelopment website.

### **3.3. Design guidance for POSPD in Hong Kong**

The practice of POSPD began in 1962 with the enactment of the *Buildings (Amendment) Regulation*, which encouraged developers to provide public space to widen streets for public access. However, due to the lack of specific requirements for design quality in the regulations, most POPSD built during this period have poor openness.

In order to improve the construction quality of private development public open space, the Hong Kong Development Council invited a consulting team to investigate the POSPD in Hong Kong in 2009, summarized the design standards of public space, and finally formed the guidelines for the design and management of private development public open space in 2011. The guidelines are divided into two parts: design guidelines and management guidelines. In the design guidelines, the space is classified into five categories: public green space, square space, courtyard, small rest space, and corridor, and the design standards for its shape, proportion, area, visibility, and green area are formulated (Figure 3). In the management guidelines, the owner's responsibility, the opening hours, and the permitted activities are stipulated, and a signboard is required to be set up near the site to publicize the site information.

In the stage of maintenance, the government has created an online information disclosure platform for the public to consult relevant information. At the same time, the government also cooperates with social organizations to set up "Expanding Public Space" and "Civic Exchange Policy Institute" to supervise the existing POSPD and build a POSPD database, so as to assist the government to optimize the POSPD policy.

Type	Public green space	Square	Courtyard
Diagram			
Area	Minimum 500m <sup>2</sup>	Minimum 500m <sup>2</sup>	Minimum 200m <sup>2</sup>
Slope	Flat land is preferred	Flat land is preferred	Flat land is preferred
Green area	Not less than 50%	Not less than 30%	Not less than 30%
Type	Small rest space	Gallery	
Diagram			
Area	Minimum 100m <sup>2</sup>	not applicable	
Slope	Flat land is preferred	Depending on the	
Green area	Not less than 30%	Depending on the venue, Shade is better	

**Figure 3.** Design guidelines for public open space in private developments in Hong Kong

### 3.4. Design guidance for Open space in Tokyo

In 1970, Japan revised the *Building Standards Law*, which added the policy of "comprehensive design system" and put forward the concept of "open space". In order to improve the urban environment and increase the utilization rate of land, Tokyo began to implement a comprehensive design system in 1976.

In Japan, the floor area ratio award standard varies from region to region. Tokyo determines plot rate incentives based on functional areas, benchmark plot ratio, effective open space area, etc. The effective open space area is related to the evaluation coefficient of different kinds of open space, which depends on the width of open space, afforestation, and other conditions. In terms of the later management, Tokyo requires open space to be equipped with stainless steel signage with its information. The owner shall appoint a person in charge of the open space management and submit maintenance management reports to the mayor every three years to ensure the quality of the space.

### 3.5. Design guidance for POPOS in San Francisco

San Francisco issued the *San Francisco Planning Guidelines* in 1968, which introduced floor area ratio incentives to encourage developers to provide public open space for the city, but the quality of public space is poor due to the lack of institutional management. In 1985, the City Council passed Section 138 of the *Town Centre Planning Act*, which established design guidelines for developers to provide POPOS within the building site, setting out the goal of "providing high-quality open space in the town center to meet the needs of workers, residents, and visitors in the town center".

The planning law proposes 20 types of POPOS, including urban parks, plazas, atriums, and terraces. Since then, 23 POPOS of high quality have been built for public use. In 2009, San Francisco Urban Planning Research Association conducted a survey of public space, drew a POPOS map of San Francisco, listed the opening hours, facilities, current situation, and other information, and made a simple comment on the current situation of use. The owner is responsible for the maintenance of POPOS, and signs are required to provide basic information at the entrance. If the owner fails to comply with the regulations and approval conditions for POPOS, he or she will be fined under Section 176 of the Planning Code. The public can also lodge complaints against the owners online.

### 3.6. Experience summary

Some advanced cities have earlier practice and rich experience in building public open spaces. As a pioneer in the practice of architectural public open space, New York has the most perfect design guidance and control. Hong Kong, Tokyo, San Francisco, Singapore, and other cities have learned from New York's experience and formulated appropriate design guidance and control policies of building public open space according to local conditions. The overall characteristics of its guidance can be summarized from three aspects: reward and recognition mechanism, design guidelines, and later maintenance.

In the award and recognition mechanism, they flexibly set the award standard according to the density and construction situation of different regions, and put forward the recognition procedures including application, approval, acceptance, and other processes, so as to ensure the reasonable construction of public space.

In the design guidelines, each city makes a detailed classification and regulations such as the area, size, visibility of the public open space, to ensure the quality of the public space.

In the aspect of later maintenance, the owners of the public open space of the building shall manage the open space. Some cities also cooperate with social organizations, such as APOPS in New York, to carry out follow-up improvements of public space and improve the satisfaction of public space.

## 4. CURRENT SITUATION AND DEFICIENCY OF BUILDING PUBLIC OPEN SPACE DESIGN GUIDANCE IN MAINLAND CHINA

### 4.1. Current situation of guidance in Mainland China

In recent years, Shanghai, Shenzhen, Guangzhou, and other cities in Mainland China have successively carried out the practice of building public open spaces.

In 1994, Shanghai promulgated the *Technical Provisions of Shanghai Municipality on Urban Planning and Management (Land Use and Building Management)*, which stipulated the size and conditions of open space. However, the content of incentives for plot ratio is rough, and the incentive method is not flexible enough to be promoted. Later new regulations have improved the recognition standards and reward content, but they are still vague in terms of construction guidelines and lack of institutional guarantee, making it difficult to implement in the later stage.

Based on the experience of Hong Kong, Shenzhen introduced the legal plan system in 1998 to guide the

building public open space at the level of urban planning. In 2006, Shenzhen issued the *Shenzhen Special Economic Zone Public Open Space System Planning*, which proposed the concept of "Non-independent Occupation of Public Space", encouraging developers to provide public space for the public. Although many public open spaces have been built in Shenzhen under the incentive of requirements and plot rate incentive, the quality of building public open spaces is uneven due to the lack of design standards and management feedback after completion.

Guangzhou put forward the concept of "Building public open space" in 2015 and implemented regulations on the all-weather public space open to the public in the building land. Subsequently, relevant regulations were made on its space type and size standards, but the quality of construction and operation could not be guaranteed due to the lack of detailed construction measures and supervision mechanisms.

In addition, many cities such as Beijing, Hangzhou, and Dongguan have also carried out relevant practices. In 2001, Beijing issued the *Technical Management Requirements for the Adjustment of Normative Detailed Planning Indicators for the Central City of Beijing (for Trial Implementation)*, which stated that developers and builders can provide appropriate floor area ratio rewards for providing public open space; In 2006, Hangzhou issued the *Regulations on the Construction and Management of Urban Public Open Space in The Core Area of Qianjiang New Town (Trial)*, which proposed the concept of "Attached Public Space on the Land with Non-public Property Rights" and formulated the relevant space reward system and implementation rules. In the *Technical Regulations on Urban Planning Management* issued by Dongguan in 2006, it is stipulated that the public open space on the ground floor is not included in the plot ratio, and the opening conditions such as opening time and space area are stipulated too.

#### 4.2. The deficiency of guidance in Mainland China

In general, the practice of building public open space in mainland China is relatively slow. Although many cities have begun to introduce relevant policies, there are still many problems in the construction of public open space in China due to the lack of experience in design control.

First, the relevant system is not clear enough. Although many domestic policies and regulations have put forward incentives for plot ratio, many local incentive policies are not clear enough, and the design scheme is not required to show, which makes it difficult to control the space quality.

Second, the design guidelines are not perfect. The current design guidelines and the classification of open space types are rough, resulting in the low quality of the completed space.

Third, the later maintenance mechanism is not perfect. The maintenance of the building public open space that has been built is loose, and the management responsibilities of the owners are not clear. Therefore, the space is not well maintained during operation, and some Spaces are seriously privatized, resulting in the low utilization rate of space.

## 5. CONCLUSION

Building public open space plays an important role in urban construction, which can effectively alleviate the shortage of public space and optimize the quality of the urban environment. The practice of building public open space in advanced cities has been mature, but the construction in mainland China is still in the initial stage. As demand for public space increases in Chinese cities, we should improve the design guidance and control of building public open space based on China's national conditions and advanced urban experience. In terms of management and control, it is necessary to optimize the reward mechanism, improve the review mechanism, and strengthen subsequent maintenance. We can refer to the experience of New York and Hong Kong to establish cooperation between the government and non-profit organizations to jointly monitor and maintain the public open space of the building. The design should focus on the overall construction, improve the design guidelines, and refine the design requirements so that the public open space of the building can better serve the city.

## ACKNOWLEDGMENT

General Program of Natural Science Foundation of Guangdong Province (2021A1515010885)

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