

Micro-Renewal Design of Typical Public Spaces from the Perspective of Residents' Activity Characteristics and Spatial Needs: Taking Baizhifang Street in Xicheng District as an Example

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Abstract: As China's urbanization development direction has shifted from incremental construction to upgrading existing structures, urban renewal has become an important planning approach, and the gradual micro-renewal model has become a key trend for residential area transformation. Additionally, the local renewal approach focusing on public spaces of residential areas is becoming a new way to enhance the quality of urban public spaces, stimulate urban vitality, and promote sustainable development of regions. Currently, due to the long building years and other factors, old communities have insufficient public facilities, parking difficulties, outdated facilities, and other problems, making it difficult to meet the needs of residents' lives. This paper takes Baizhifang Street in Xicheng District as an example and starts from the meaning of participatory design, respecting the existing environment and policies in China, discussing the public space problems, selecting the renewal area and formulating design strategies, and finally showcases the actual application of the design in public space renovation.

Keywords: Urban micro-regeneration; Urban renewal; Rehabilitation of old neighborhoods

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1. Introduction

In 2016, the "Guangzhou Urban Renewal Measures" first mentioned micro-renovation, based on maintaining the status quo, renewing through partial demolition and construction, functional replacement, repair, and protection, and many others, aiming to improve the living environment, stimulate the vitality of neighborhoods, and pass on the regional culture ^[1].

In July 2021, the “Small Space, Big Life—Micro Space Transformation for the People” project was completed, with eight pilot micro space projects completed under the leadership of the government, the leadership of think tanks, and public participation, solving practical problems of the residents and promoting grassroots governance and urban renewal. At the moment, the government attaches great importance to the transformation of small and micro spaces and has issued several policies to encourage pilot projects and promote the quality of cities and communities. Localities have responded positively by launching transformation projects and public participation has become an important part of the process. Through the collection of opinions, community discussions, and other means, residents have participated in the development and implementation of transformation programs, which has strengthened their sense of participation and satisfaction with the transformation of their communities. This model of joint consultation and sharing has helped to form a new pattern of community governance ^[2].

2. Street situation

2.1. Street location overview

- (1) Location and area: Baizhifang Street is located in the southwest of Xicheng District, Beijing where the jurisdiction of the maximum distance between east and west is 2.1 km, the maximum distance between north and south is 1.6 km, with a total area of 3.1 km².
- (2) Administrative divisions: Baizhifang Street is located in the southwest corner of Beijing’s old city, adjacent to Ox Street in the north, east of Taoranting Street, west to Guangwai Street, south looking at Fengtai. This street serves as a critical connection between the old city and its periphery, forming an important transportation hub for the southern part of Beijing. Key landmarks include CaiShiKou Street to the east, the Second Ring Road to the southwest, and the Beijing South Railway Station and Yongdingmen Long-distance Coach Terminal to the southeast (see **Figure 1**).

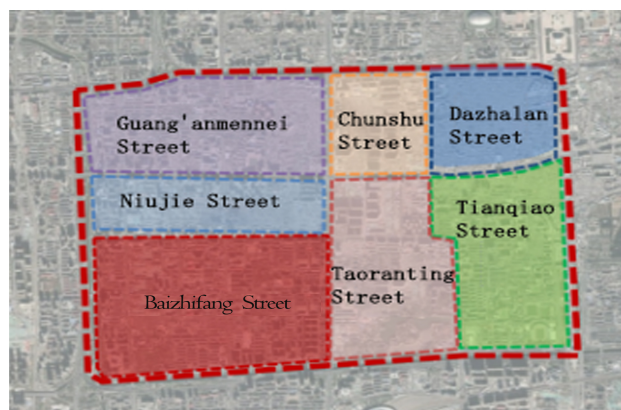


Figure 1. Street location

2.2. Street history

The Baizhifang area has a long history, belonging to the southwestern suburb of Nanjing during the Liao Dynasty, located in the central capital city during the Jin Dynasty, and gradually developed into part of the city during the Ming and Qing Dynasties. After several administrative reorganizations, the current Baizhifang Street was finally formed in 1958 from Baizhifang, Guojiajing, and part of Zixinlu and Zaolinqianjie streets (**Figure 2**).

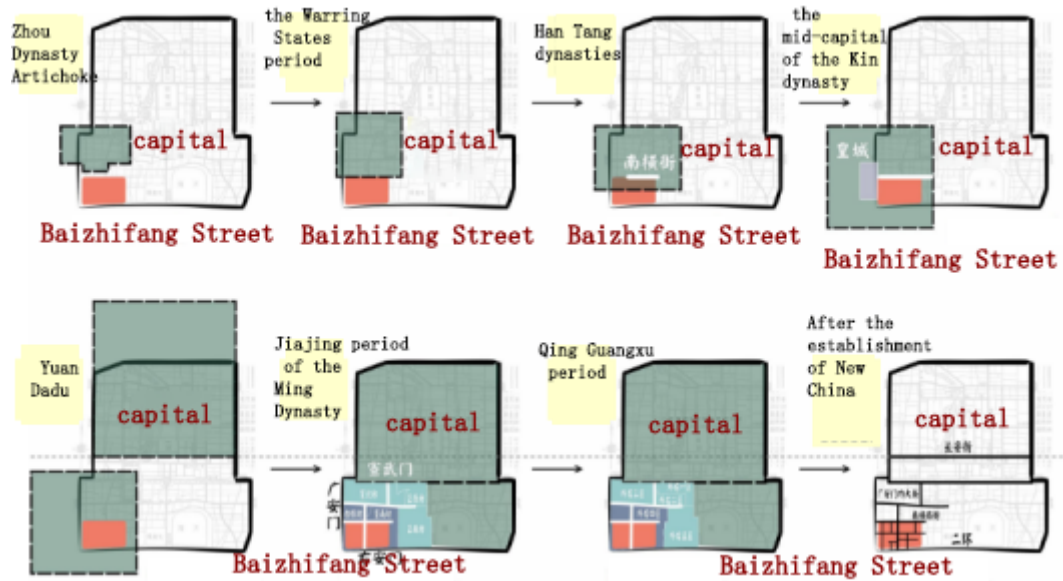


Figure 2. History of Baizhifang Street

2.3. Street characteristic culture

Since the Jin Dynasty, Baizhifang Street has served the important function of serving the central government and is the only street in Beijing that continues to bear the name of “Fang” reflecting its historical association with paper production. As a model for the planning of Beijing’s old city after the founding of New China, it is also an area where the development of modern education has come to fruition. Deeply rooted in the multi-cultural hinterland of Xuannan, Baizhifang Street is home to representative non-legacy programs such as “Baizhifang Tai Lion” and “Baizhifang Satchel Drums” which are not only of deep cultural heritage and high artistic value but have also become the street’s unique cultural card, which the street is actively protecting and passing on to provide new vitality to the area’s cultural endeavors. These projects not only have deep cultural heritage and high artistic value but also become the unique cultural card of the street [3].

2.4. Research on the characteristics of residents’ activities and spatial needs

The daily activities of the residents of Baizhifang Street are primarily influenced by the age structure of the population. According to preliminary research statistics, the main activities of residents in the Baizhifang community include living, working, and leisure. Due to the large proportion of elderly residents, the community’s current activities are predominantly geared toward the elderly (see Figure 3).

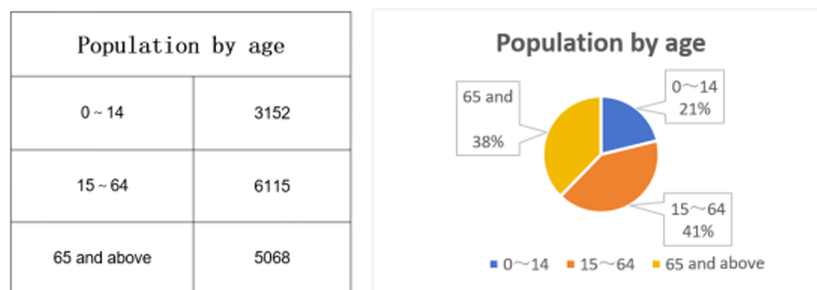


Figure 3. Demographics of the Baizhifang community

The community offers a wide range of activities, including various sports, cultural events, and multiple types of elderly services. Most activities are developed based on the community’s existing resources, ensuring they are tailored to the needs of the residents. This approach has allowed for the effective and innovative use of original community resources. To address residents’ demand for activity spaces, the street has implemented a “2 + 5 + 2N” model for its elderly service consortium. This model includes two elderly care centers, five elderly service stations, and several self-managed organizations and service resources for the elderly ^[4].

3. Selection of design site

With the acceleration of urbanization, the aging infrastructure in older communities—an integral part of the city—is becoming increasingly problematic. As a critical facility for parking and charging non-motorized vehicles, the condition of old carports directly affects the safety and convenience of residents. In response, the team chose the carport space, which has been a longstanding issue for residents, in the Pingyuanli sub-district of Baizhifang Street to implement a micro-renewal design ^[5].

3.1. Site condition

With the assistance of the street office staff, the team visited 19 communities to understand their basic situations and challenges in community governance. During these interviews, common issues in older neighborhoods were identified, such as parking difficulties, poor environmental conditions, and inadequate property management. Additionally, some community leaders and residents highlighted specific problems and suggestions unique to their communities.

Based on an analysis of the conditions in each community within Baizhifang Street, the team ultimately chose the Pingyuanli Community for transformation. Established in September 2018, the Pingyuanli Community is “young” in terms of its founding date but “old” regarding its facilities. As a relocated neighborhood built in the 1990s, it has a high population density and numerous resident demands ^[6].

3.2. Problem identified

The pre-design team conducted in-depth research and a comprehensive survey using methods such as questionnaires, on-site observation, and resident interviews. The following issues were identified regarding the use of carports, safety conditions, and management status.

(1) Safety hazards

- (a) Fire safety issues: Aging wires and private charging setups in the old carports pose significant fire risks. Additionally, the accumulation of debris in the carport obstructs fire escape routes, which could lead to catastrophic consequences in case of a fire.
- (b) Structural safety issues: The carports, built long ago, suffer from roof damage and are at risk of collapse. Narrow entrances and exits hinder vehicle parking and resident movement.
- (c) Lack of security awareness: Residents exhibit unsafe behaviors such as improper charging and haphazard parking of vehicles, increasing security risks.

(2) Management deficiencies

- (a) Inadequate maintenance: Lighting facilities in the carports are either missing or damaged, making night-time parking inconvenient and unsafe.

- (3) Residents' demand
 - (a) Parking difficulties: The increasing number of non-motorized vehicles has exceeded the parking capacity of the old carports.
 - (b) Charging challenges: Residents resort to private wiring from windows, creating hazardous “sky nets” that pose significant safety risks.
- (4) Lack of vitality:
 - (a) Unattractive appearance: The carports are poorly designed, negatively impacting the neighborhood's aesthetics.
 - (b) Limited functionality: The carport spaces lack versatility and fail to contribute to the community's vibrancy.

3.3. Program strategies

In response to the problems identified in the research, we have developed targeted solution strategies for the micro-space, categorized into the following five areas.

- (1) Intelligent equipment addition: Increase the power exchange station in Carport 1 and simultaneously set up a monitoring system and an intelligent charging system in all three carports to facilitate their management [7].
- (2) Rational planning and utilization of space: Redelineate the parking space lines, ensuring a strict division between non-motorized and motorized vehicle parking areas. Additionally, allocate a 6.4 m × 1.5 m space in the carport for parking “zombie cars” to address parking difficulties and other issues (see **Figure 4**) [8].

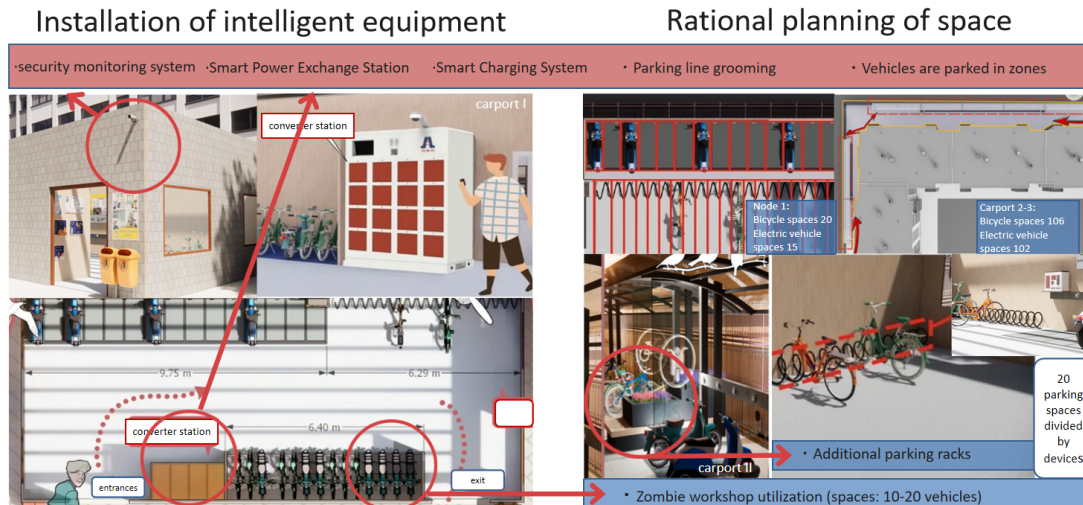


Figure 4. Program Introduction I

- (3) Infrastructure improvement: The old lamps and lanterns will be updated, and an acrylic baffle with a light-emitting diode (LED) strip will be used to separate the motorized and non-motorized parking areas. This will provide soft lighting for residents returning home at night while also helping to regulate the parking area. Moreover, the carport, which originally had poor lighting due to its closed design, will have its roof transformed using polycarbonate panels and other materials. This will provide shading from the sun while also enhancing lighting, as shown **Figure 5**.

Infrastructure improvements

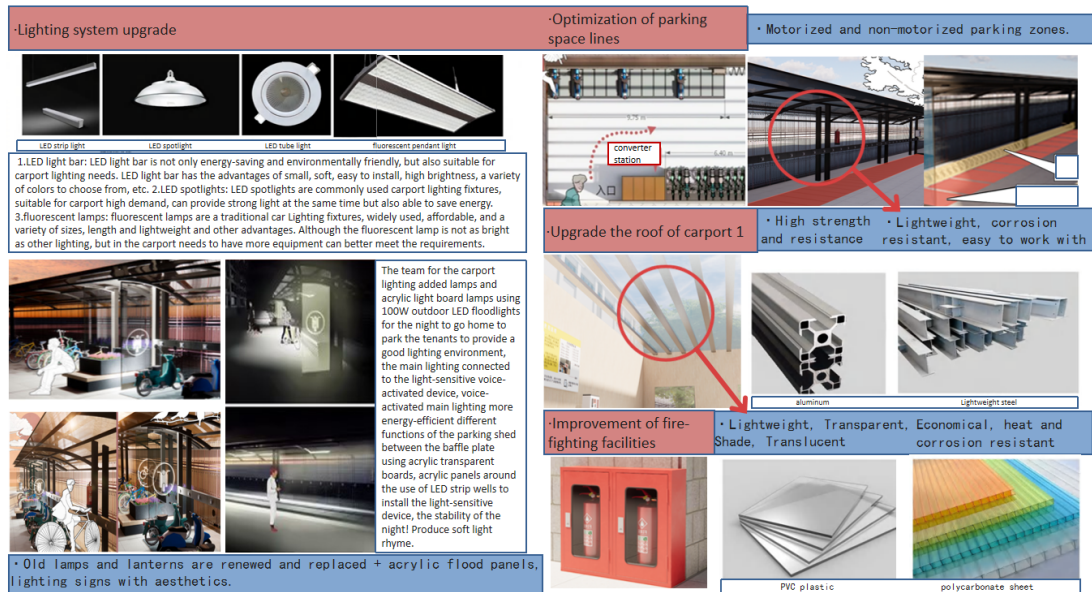


Figure 5. Program Introduction II

- (4) Environmental beautification and functional revitalization: The core highlight of the program is the division of the parking area using green flower beds. The flower bed platforms, which also function as seating areas, meet the needs of community residents who wish to rest. The seats are designed at an appropriate height, making them particularly accessible and comfortable for the elderly. In addition to beautifying the environment, the flower beds also enhance the vitality of the space, as shown in **Figure 6**.

Landscaping and functional revitalization

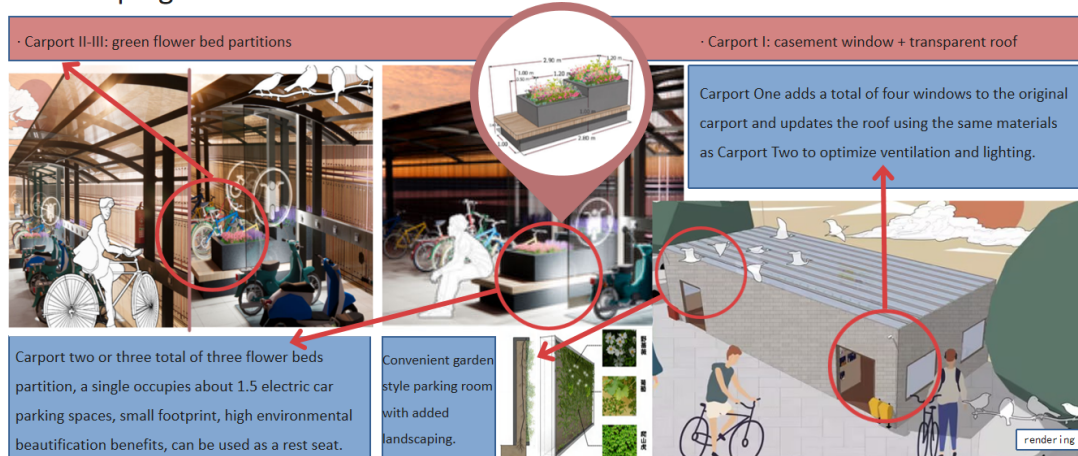


Figure 6. Program Introduction III

- (5) Residents' needs: We produced a variety of guide signs, charging station guidelines, graphic maps, and more. Furthermore, we utilized the street property's intellectual property (IP) image, "Xiaobai," to create safety posters aimed at raising residents' safety awareness. Moreover, we formulated a set of community policies that use rewards and penalties to encourage residents to regulate their parking behavior^[9].

4. Conclusion

Using Baizhifang Street in Xicheng District, Beijing as a case study, this article explores the importance of the urban micro-renewal model in settlement renewal within the context of urbanization. The investigation focuses on the micro-space of the Pingyuanli Community in Baizhifang Street, following the “people-oriented” concept to optimize the design of carport spaces based on residents’ activity patterns and spatial needs. The renewal of public spaces in Baizhifang Street is a long-term and complex process requiring the joint efforts of the government, community, and residents. As one of the typical communities in Baizhifang Street, the Pingyuanli Community serves as a valuable model for micro-renewal projects, particularly through its carport micro-renewal initiative. It is believed that with continuous optimization, innovative approaches, and the integration of historical and cultural characteristics, Baizhifang Street can evolve into a modern community model featuring well-functioning infrastructure, a beautiful environment, and satisfied residents.

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The authors declare no conflict of interest.

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