

Landscape Optimization Strategies for Pocket Parks in Old Communities

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Abstract: With the accelerating process of modern urbanization, the renewal and transformation of old communities have become an important way to further improve residents' quality of life. As one of the carriers of modern urban micro-renewal, pocket parks not only play roles in improving the community environment and providing spaces for leisure and entertainment, but also can create micro landscape areas for communities under the premise of limited land resources, thereby enhancing residents' sense of life experience and living happiness. By expounding the significance and challenges of landscape optimization and transformation of pocket parks in old communities, this paper puts forward specific measures such as adapting to local conditions, multi-stakeholder participation, and refined design, so as to provide theoretical reference and practical experience for urban micro-renewal in this region.

Keywords: Old communities; Pocket parks; Landscape architecture; Optimization; Transformation

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1. Introduction

The construction of modern cities is shifting from “incremental expansion” to “inventory optimization.” Therefore, the efficient use of urban marginal spaces and the improvement of living quality in old communities have become one of the important goals of current urban development and construction. Pocket parks, with the advantages of small scale and flexible layout, are the most suitable form for transforming idle, abandoned, and marginal lands in communities among various types of community public spaces. They can serve as “urban micro oases” for residents' daily leisure, communication, and entertainment.

2. Significance of landscape optimization and renovation of pocket parks in old communities

2.1. Enhancing residents' quality of life and sense of happiness

Although pocket parks are small in area, they are the most accessible natural spaces for community residents to

visit and enjoy, and can be regarded as landscape gardens in residents' daily lives. Taking Tiemenguan City of the 2nd Division as an example, the city has a large number of high-density built community spaces, where green natural areas are scarce. The renovation and optimization of pocket parks can provide residents with areas to get close to nature and appreciate landscapes ^[1]. These small green spaces not only meet residents' life pursuit of "seeing green when opening windows and seeing scenery when going out", but also allow residents to feel nature and experience life in daily life, thus becoming an important means to enhance residents' quality of life and sense of happiness.

2.2. Improving urban ecological environment and climate adaptability

Modern cities are facing ecological challenges such as the heat island effect. As a city in an arid area, Tiemenguan City of the 2nd Division also faces problems such as water shortage. On the one hand, the renovation and optimization of pocket parks can increase vegetation coverage and play ecological functions such as shading and cooling, and rainwater collection. On the other hand, they can also play a role in improving the local microclimate environment ^[2]. For example, through the integrated design of green belts, pocket parks, and slow-moving trails, it can not only beautify the environment but also reduce road noise, absorb dust, and adjust the local climate, thereby enhancing the city's climate adaptability.

2.3. Promoting community cultural identity and social harmony

Pocket parks are community public service spaces and important areas for residents' daily communication and activities. Therefore, their optimization and renovation help to strengthen the cohesion and cultural identity within the community. Taking Tiemenguan City of the 2nd Division again as an example, the city has the characteristic of a multi-ethnic settlement. After the renovation of community spaces, the pocket parks and landscape gardens can not only meet the cultural needs of different ethnic groups, but also adapt to their communication habits ^[3]. This provides important support for multi-ethnic residents to live together, establish a unified cultural identity, and promote the harmonious development of society.

Table 1. Functional analysis of pocket parks in Tiemenguan City of the 2nd Division

Function Type	Typical Facilities	Target Users	Main Benefits
Leisure & Entertainment	Corridors, Pavilions, Seats	The Elderly, Housewives	Provide social spaces, relieve psychological stress
Fitness & Sports	Basketball Courts, Badminton Courts, Fitness Equipment	Teenagers, Middle-aged Adults	Promote physical exercise, enhance physical health
Children's Play	Sandpits, Balance Beams, Safe Flooring	Children & Their Guardians	Cultivate children's coordination, provide parent-child spaces
Cultural Display	Landscape Sculptures, Cultural Walls, Characteristic Pavements	All Residents	Inherit regional culture, Strengthen identity recognition

3. Difficulties in the landscape optimization and renovation of pocket parks in old communities

3.1. Inadequate funding and management systems

In the optimization and renovation of old communities, pocket parks require stable capital investment and scientific management systems to drive the construction, long-term maintenance, and operation of landscape

gardens. Currently, cities face the issue of “prioritizing construction over management” in this process. For instance, after the completion of investment and construction, there is a lack of management and maintenance for the pocket parks, such as the upkeep of their sanitary environment, lighting, and supporting facilities. Problems like random accumulation of debris and occupation of leisure and entertainment spaces even occur ^[4]. This phenomenon mainly arises from the absence of professional management teams and the lack of special funds for maintenance and operation. As a result, the subsequent service functions of pocket parks are limited, leading to issues such as delayed garbage disposal, damaged equipment, and withered vegetation.

3.2. Lack of humanistic care in planning and design

The optimization and renovation of landscape gardens in pocket parks of old communities should adhere to the people-oriented principle. However, most current planning and design of pocket parks lack research on the actual needs of residents, resulting in low utilization rates after renovation and completion. Some pocket parks have unreasonable location selection for renovation, such as being too close to main roads, which exposes residents to significant impacts from traffic flow and noise; others have insufficient functional configuration, like the lack of fitness equipment or children’s play facilities ^[5]. Taking Tiemenguan City of the 2nd Division as an example, its special climatic conditions require more consideration of functions such as shading in summer and wind protection in winter, and the selected green plant species should also conform to the local climate conditions—only in this way can the real usage needs of residents be met.

3.3. Insufficient regional characteristics and cultural expression

Tiemenguan City of the 2nd Division is a typical multi-ethnic city with rich ethnic cultural resources and distinct regional cultural features. However, in the renovation and construction of pocket parks in old communities, these regional characteristics and cultural integration have not been reflected; there is even a “one-size-fits-all” design model. The local historical culture and ethnic art of Tiemenguan City of the 2nd Division have not been deeply explored, the multi-ethnic culture has not been combined with modern landscapes, and public spaces that meet both traditional charm and modern aesthetic needs have not been built. As a result, the landscape gardens face the practical problem of being “green but not scenic, and scenic but not distinctive” ^[6].

3.4. Imperfect public participation mechanism

Pocket parks and landscape gardens are part of community public spaces. However, in the process of renovating and optimizing old communities, residents’ opinions have not been fully heard, resulting in insufficient public participation. Some old community renovation projects adopt a top-down decision-making and management model. The renovation needs are proposed by project managers or leaders throughout the process. Ordinary residents have neither platforms nor channels to express their needs, nor can they provide timely feedback on problems and shortcomings in the renovation ^[7]. This causes a large gap between the completed pocket park landscapes and residents’ expectations.

4. Landscape optimization and renovation strategies for pocket parks in old communities

4.1. Establish a multi-stakeholder participation mechanism to achieve co-construction, co-governance, and shared benefits

In the process of landscape optimization and renovation of pocket parks in old communities, the multi-stakeholder

co-governance model of “government guidance, community leadership, resident participation, and professional support” is the key to ensuring the realization of functions and meeting residents’ needs.

First, during the planning stage, residents’ opinions should be collected in a comprehensive way. For example, through community forums, online questionnaires, and the establishment of participatory design workshops, residents’ different needs and preferences can be understood, and the age structure and hobbies of community residents can be counted. This helps to set up targeted service spaces, making residents participants in community renovation and establishing a mechanism of co-construction, co-governance, and shared benefits ^[8].

Second, during the management and maintenance stage, a “volunteer adoption mechanism” or “park director mechanism” should be established to encourage residents, enterprises, or social organizations to participate in the daily maintenance and management of pocket parks. This can also effectively reduce operation and maintenance costs. For old community pocket park renovation projects with sufficient financial support, professional operation and maintenance teams can be hired to take charge of green plant management, cleaning and protection, and equipment maintenance of pocket parks ^[9]. At the same time, community residents can be invited to serve as supervisors, and management requirements can be implemented through the method of “daily inspection + monthly evaluation + weekly patrol” ^[10]. For projects with insufficient funds, volunteer teams can be organized among community residents to take turns or divide responsibilities for maintaining the environmental sanitation and facilities of pocket parks.

Third, in terms of fundraising, diversified funding channels should be developed. On the one hand, the government’s investment and support role should be fully exerted; on the other hand, through corporate sponsorships and community fund projects, sustainable guarantees can be provided for the construction and long-term maintenance of pocket park landscape areas ^[11]. For Tiemenguan City of the 2nd Division, old community renovation projects can be combined with urban renewal projects to obtain more sufficient financial support.

4.2. Implement refined design to improve spatial function and quality

The optimization and renovation of pocket park landscapes should adhere to the basic concept of “people-oriented”, so as to improve the spatial quality of old communities through spatial scale design, service function optimization, and detailed expression, and better serve residents.

First, the landscape design of pocket parks should be based on the local climate characteristics. Taking Tiemenguan City of the 2nd Division as an example, the design of its buildings and facilities must take into account functional needs such as shading, water conservation, and wind protection. For instance, in a green plant configuration, local arbors and shrubs can be selected, which can not only create shaded spaces in summer but also achieve light transmission effects in winter ^[12]. Another example is in ground design: permeable pavement can be used, and even a rainwater collection and recycling system can be established to build a “sponge city.”

Second, the landscape design of pocket parks should rely on the structural characteristics of surrounding residents and select targeted and differentiated functional facilities. For example, in old communities with a large number of elderly residents, the renovation of pocket parks should set up more leisure seats and fitness equipment. The design of walkways should pay attention to anti-slip, and the setting of steps should be convenient and safe. For old communities with concentrated young families, attention should be paid to providing children’s play facilities, while ensuring ground safety to create a healthy atmosphere for children’s growth.

Third, the landscape design of pocket parks should follow the principle of refined design, and show its design characteristics and life charm through details. For example, in lighting design, attention should be paid to the

attributes and methods of residents' nighttime activities to ensure safety and comfort; in the design of sign systems, symbols should be simple, clear and easy to read, ensuring that both the elderly and children can understand their meanings at a glance^[13]; in the selection of green plants, seasonal changes should be considered to ensure that different landscapes can be presented in each season.

4.3. Integrate regional cultural characteristics to highlight the unique charm of the city

Pocket parks are a window for displaying urban culture. Therefore, in the optimization and renovation of old communities, it is necessary to further explore local historical culture and ethnic characteristics to showcase the unique charm and character of the city.

First, the design of pocket parks should highlight local cultural characteristics. For Tiemenguan City of the 2nd Division, the renovation of old communities in the city should be based on multi-ethnic cultural elements. It should not only highlight the cultural characteristics of different ethnic groups but also promote the integration and development of cultures. For example, in design links such as ground pavement, rail carving, and color matching, traditional patterns of different ethnic groups can be used for design optimization, so as to show the integration of the city's ethnic culture through the small space of pocket parks.

Second, the design of pocket parks should reflect local regional characteristics. Tiemenguan City of the 2nd Division has the regional characteristic of "desert oasis." Therefore, in the renovation of old communities, landscape gardens with both wilderness aesthetics and water-saving features can be created. For example, modern design language can be used to present Gobi plants, highlighting their water-saving and environmental protection characteristics^[14]. Taking the idle land next to an old community in Tiemenguan City of the 2nd Division (originally mostly the edge area of the Gobi wasteland) as an example, during renovation, the original topographic texture can be relied on, and the original Gobi landform is not deliberately leveled. Instead, drought-tolerant vegetation such as naturally growing poplar saplings and seabuckthorn bushes in the plot is retained, and only the messy areas are properly organized. At the same time, water-saving landscape design is adopted, and gravel is used to pave and simulate the form of "dry streams" (which can collect water briefly in the rainy season and show the dry landscape artistic conception of Gobi streams in the dry season). It is matched with local shrubs such as *Elaeagnus angustifolia* and *Tamarix chinensis* irrigated by drip irrigation. In addition, small reliefs with the theme of "oasis change" are set up at the landscape nodes (showing the local construction process from the Gobi wasteland to the oasis home). Such a design not only retains the regional recognition of Tiemenguan City of the 2nd Division but also makes the pocket park a space carrying the collective memory of "Gobi turning into oasis" for community residents, endowing the small park with deeper regional cultural connotation and emotional value.

Third, the design of pocket parks should focus on preserving historical and cultural memories. The history of "corps reclamation and border defense" in Tiemenguan City of the 2nd Division is the soul of the city. The renovation of old communities can be designed around such landmark scenarios. Taking the community around the "former site of the old military reclamation grain station" as an example, during renovation, the remains such as the rammed earth wall of the old grain warehouse and the wooden grain bin frame are retained; the exhibition boards of "grain affairs in reclamation" are added, matched with the replicas of old grain coupons and measuring tools; and metal silhouette devices are used to restore the scene where soldiers and the masses dried grain together. This not only inherits the reclamation spirit but also allows residents to intuitively feel the foundation of urban development and strengthen cultural identity.

4.4. Establish a dynamic maintenance mechanism to ensure sustainable operation

Against the background of old community renovation, a dynamic maintenance mechanism and a performance evaluation system should be relied on to solve the problem of “prioritizing construction over management” in pocket parks.

First, issue standardized documents such as the Standards for the Construction and Management of Pocket Parks, clarify the maintenance cycle and quality standards of various facilities in the park, and refine them to ground pavement, seat indicators, safety standards for construction equipment, plant pruning and irrigation indicators, and pest control specifications, so as to form hard regulations.

Second, promote the application of smart landscape technology and adopt intelligent management solutions. For example, in the management of green plant irrigation, soil moisture sensors and drip irrigation, and sprinkler irrigation systems can be installed. When the sensor detects that the soil dryness level meets the irrigation requirements, the irrigation can be automatically completed through the irrigation system^[15]. This is not only suitable for the water-scarce environment of Tiemenguan City of the 2nd Division, but also achieves the effect of environmental protection and energy conservation.

Third, establish a regular evaluation mechanism, actively collect residents’ use feedback through online platforms, and timely identify and solve problems. For example, a community public service official account can be established, and information feedback can be collected through the resident feedback module to gather the needs of the masses, and an evaluation list can be established accordingly. Relevant staff must conduct on-site inspections and problem identification regularly according to the list, and complete projects such as safety inspections, landscape renovation, plant configuration, and cultural implantation in a certain order. Through dynamic adjustment, they can continuously adapt to and meet the needs of residents.

5. Conclusion

To sum up, the construction of pocket park landscapes is an important part of the renewal and renovation of old communities. It not only has the functions of improving the living environment, enhancing the quality of life, and promoting residents’ communication, but also can optimize urban green spaces, beautify the urban environment, and highlight urban culture. In this regard, when renovating old communities, cities should create high-quality public spaces that are not only in line with local climate conditions but also rich in cultural characteristics by establishing a multi-stakeholder participation mechanism, implementing refined design, integrating regional cultural characteristics, and establishing a dynamic maintenance mechanism, so as to truly realize the development goal of “making cities better places to live.”

Disclosure statement

The author declares no conflict of interest.

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