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Research on the Renovation Design of Service Stations for Outdoor Workers Under the Background of Urban Renewal

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Abstract: With the continuous advancement of new-type urban renewal, urban construction has transformed from the previous old-city reconstruction to refined, human-oriented and quality-oriented stock-improvement renovation, and more attention has been paid to the people's livelihood value and humanistic warmth of urban public spaces. Outdoor workers are the cornerstone of urban operation, including sanitation workers, food delivery riders, couriers, municipal maintenance workers, bus dispatchers, and other groups. Working outdoors in complex environments all year round, they often face practical troubles such as no place to rest, lack of access to safe drinking water, difficulty in charging, and lack of shelter from heat and cold. As important service venues for new-employment-form groups, service stations for outdoor workers guarantee the rights and interests of outdoor workers. They constitute a vital part of the urban people-livelihood service system, and also serve as carriers for remedying shortcomings in public services and improving the refinement level of urban governance in urban renewal. Based on the core philosophy of urban renewal, this paper takes service stations for outdoor workers as the research object, sorts out the current construction status and existing problems of urban service stations for outdoor workers, and puts forward specific renovation-design strategies from multiple perspectives. It aims to build a series of standardized, human-oriented and intelligent service stations for outdoor workers that can adapt to urban-development needs and satisfy workers' demands with both practicality and aesthetics. Thereby, it promotes the improvement of the urban public-service system, raises the capacity of urban people-livelihood guarantee and the level of refined governance, and provides people-livelihood support for high-quality renewal and development of cities.

Keywords: Urban renewal; Outdoor workers; Service stations; Renovation design

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1. Introduction

Against the background of refined urban renewal, the renovation and upgrading of service stations for

outdoor workers is inevitable. Promoting the standardized, human-oriented, and intelligent renovation of service stations is a practical necessity for remedying shortcomings in urban public services and improving the people-livelihood guarantee system. It also meets the needs of improving urban public spaces, elevating urban governance capacity, and reflecting urban humanistic care. According to the development requirements of current urban renewal and the actual service demands of outdoor workers, this paper analyzes the construction status and existing problems of service stations for outdoor workers, and explores scientific, reasonable, and practical renovation-design ideas and methods. It hopes to provide references for the quality improvement and upgrading of urban outdoor public-service stations, as well as for the coordinated development of urban renewal and people-livelihood guarantee.

2. Current status of service stations for outdoor workers

2.1. Overall overview of construction and development

In recent years, the state has attached great importance to the protection of the rights and interests of workers in new-employment forms, and has issued multiple policy documents concerning the construction of service stations for outdoor workers and the building of rest-guarantee systems for outdoor workers. Across the country, active responses have been made to policy requirements. Resources from trade unions, communities, enterprises, social-organizations and other parties have been integrated to vigorously promote the layout and construction of service stations for outdoor workers, with a growing number and expanding coverage of stations [1]. At present, there are three major construction modes for domestic urban service stations for outdoor workers. First, government-led construction: standardized stations are built relying on municipal supporting spaces, idle street-corner land and supporting buildings in public green spaces. Second, trade-union-initiated construction: idle spaces of community party-mass service centers and staff-service centers are renovated and upgraded. Third, social co-construction: caring service stations are set up in cooperation with street-side shops, business-district enterprises and logistics outlets, forming a diversified co-construction pattern [2].

In terms of construction scale, stations in key road sections, business districts, industrial parks, transportation hubs and sanitation-operation zones in main urban areas of most cities have achieved full coverage. Some cities are building a “15-minute service circle” to provide more convenient rest places for outdoor workers [3]. In terms of basic facilities, existing stations are basically equipped with basic devices such as seats, drinking-water appliances, and sun-shade & rain-shelter facilities. Some standard stations are additionally provided with convenient facilities including microwave ovens, refrigerators, charging sockets, and first-aid kits to satisfy outdoor workers’ most basic demands for short-term rest, drinking water, recharging, and breakfast. Meanwhile, in the process of urban renewal, some cities renovate old street corners, idle facilities, and abandoned sentry boxes by making use of micro-spaces, and build small-sized and convenient outdoor-service stations. Such practice makes good use of urban stock-space resources and improves the utilization rate of public spaces [4].

2.2. Core existing problems

2.2.1. Unreasonable spatial layout and unbalanced service coverage

At present, service stations for outdoor workers in most cities suffer from scattered distribution, disorderly

planning, limited coverage, and lack of overall coordination with the master-plan of urban renewal. In the preliminary planning of urban renewal, service stations for outdoor workers are not incorporated into the public-service supporting system in most areas. Most stations are built afterward in a scattered manner instead of forming systematic and holistic layouts [5]. In terms of regional distribution, stations are densely distributed in business districts, main roads, and core urban areas, while few stations can be found in urban-suburban junctions, newly-built zones, key sanitation-operation zones, and logistics-concentrated zones, resulting in service blind spots. Besides, the locations of some stations are divorced from workers' working environments. Some street-side stations enjoy low utilization rates due to poor accessibility or concealed locations. By contrast, corresponding supporting service stations are absent from working road sections and sites frequently visited by food-delivery riders and sanitation workers, making targeted service hard to realize. In addition, some old stations have small spaces with an initial floor area of less than 5 square meters, which can only accommodate three to five people for temporary rest and fail to meet demands for simultaneous rest of multiple people in peak hours, leading to very limited space-bearing capacity [6].

2.2.2. Fixed and single functional configuration and lack of human-oriented design

The most fundamental problem of existing service stations lies in single functions and lack of pertinence. Most basic stations are merely equipped with seats, water dispensers, and other facilities with identical functional designs, failing to realize differentiated settings according to the working characteristics of various outdoor-worker groups [7]. Sanitation workers lack facilities for clothes storage, tool storage, and hot-water washing. Food-delivery and courier riders are short of functional facilities suitable for high-frequency operations such as quick supplies, temporary storage, and storage-battery charging. Outdoor maintenance personnel lack supporting services, including emergency-repair tools, wind-proof warmth-keeping, and heat-stroke-prevention cooling. Human-oriented design is seriously deficient in service stations. Most stations fail to take seasonal adaptability into consideration: they offer poor ventilation and cooling in summer and insufficient warmth retention in winter. Some stations have no barrier-free facilities and inadequate night-time lighting, and cannot satisfy the usage demands of elderly outdoor workers and disabled migrant workers [8]. Apart from that, most stations only focus on basic living services, lacking extended services such as rights-and-interests protection, skill popularization, and psychological counseling. Their service scope is narrow and cannot meet diversified and multi-level demands of outdoor workers in the new era.

3. Renovation countermeasures for service stations for outdoor workers under urban renewal

3.1. Coordinate spatial planning and optimize the overall layout system

Relying on the master-plan of urban renewal, fully incorporate service stations for outdoor workers into the urban public-service supporting system and micro-space-renovation planning, end the situation of scattered construction and disorderly arrangement, and build a scientific, reasonable, widely-covered and precisely-adapted service-layout network [9]. First, comprehensively investigate the number of outdoor workers, operation scopes, working hours, and service demands in each area within the renovation-planning scope of urban-renewal zones. Accurately identify service blind spots and low-efficiency stations. Abolish, relocate, or merge old stations with unreasonable layouts and extremely low utilization rates. Add standardized stations in newly-built zones and suburban areas, set up stations in high-density operation sites,

and construct standardized stations in newly-built zones [10]. Second, build a 15-minute convenient-service circle. Make use of urban-road-renovation projects, street-corner-space-renovation projects and idle-site-reuse projects to renovate idle micro-spaces in blocks, abandoned sentry boxes, vacant shops and municipal supporting buildings into stations, without adding large-scale construction land, and implement the development concept of "stock improvement" in urban renewal. Adjust station scales according to changes in service-population. Stations in core operation zones shall cover no less than 10 square meters, and key hub stations no less than 30 square meters, so as to guarantee demand for simultaneous rest by multiple people. Set up rest areas, supply areas, storage areas, and functional areas separately to avoid mutual interference and improve space-utilization efficiency.

3.2. Focus on diversified demands and upgrade differentiated functional systems

Centering on the actual working demands of outdoor workers, abandon homogeneous functional-configuration modes, and build a hierarchical, classified, and precisely-aligned functional system to realize standardized basic functions, differentiated featured functions, and diversified extended functions. First, every renovated station shall be equipped with basic facilities including proper, comfortable seats, direct drinking-water systems, adjustable indoor-temperature-regulation devices, microwave ovens, refrigerators, various power and network interfaces, and a first-aid-medicine storage area, to satisfy multiple demands such as daily drinking, rest, meal preparation, charging, and sheltering from emergencies [11]. Second, add differentiated featured functions to match the demands of workers in different occupations precisely. For sanitation workers, set up tool-storage cabinets, clothes-storage zones, and washing facilities. For food-delivery and courier riders, build quick self-service supply zones, temporary-storage compartments, and special storage-battery-charging zones to realize pick-up-and-go and high-efficiency service. For outdoor-maintenance and municipal-operation workers, provide simple repair tools, emergency-lighting equipment, and wind-proof warmth-keeping materials [12]. Third, expand diversified extended-service contents. Add service items such as policy publicity, rights-and-interests protection, legal-advice consultation, and skill-knowledge popularization according to the upgrading demands of urban people-livelihood services. Prepare policy documents and rights-and-interests instruments, hold regular public-welfare activities, and add functions such as convenient reading, temporary rest, and charity assistance. Transform stations into comprehensive venues serving both outdoor workers and surrounding residents, and raise the value of public spaces. In addition, strengthen human-oriented detail design, optimize ventilation, warmth retention, sun-shading and sound-insulation design, and improve barrier-free facilities and night-lighting facilities to meet usage demands of all age groups and all social groups.

3.3. Integrate urban style and features and optimize station appearance design

Based on the requirements for style-and-feature improvement in urban renewal, adhere to the principle of integrating aesthetics, practicality, and coordination, and conduct all-round optimization of appearance, identification signs, and landscapes, so that stations can be deeply integrated with urban-block styles, ecological landscapes, and regional cultures [13]. First, adopt unified standardized appearance design. Customize concise, elegant, and uniform station appearances according to the architectural styles and landscape characteristics of renewed blocks. Eliminate crude temporary-style designs. Adopt environment-friendly, durable, and good-textured building materials, unify wall colors and modeling styles,

and put an end to messy construction and outdated appearances [14]. Second, incorporate regional-cultural characteristics. Carry out personalized design based on local urban culture and block features. Add regional elements and city logos to station walls, signs, and decorations to build distinctive service stations with high recognizability and cultural connotation, making stations tiny urban cultural landscapes. Third, uniformly design public-welfare signs and service publicity boards, clarify service items, opening hours, management regulations, and contact numbers to improve recognizability and convenience. Meanwhile, carry out micro-renovation on the surrounding environments of stations: clear surrounding sundries, beautify green landscapes, and add convenient landscape ornaments. Realize organic integration of stations with surrounding greenery, roads, and buildings, improve overall spatial quality, and promote refinement of urban styles. For old and simple stations, adopt low-cost renovation modes such as container reconstruction and old-facility renovation, practice the renewal concepts of low-carbon renovation and reuse of old materials, and cut renovation costs.

3.4. Promote intelligent upgrading and build smart service stations

First, upgrade intelligent hardware facilities. Install intelligent temperature-control systems, intelligent lighting, wireless fast-charging devices, intelligent storage cabinets, electronic temperature-and-humidity displays, and other intelligent terminal equipment to realize functions such as constant indoor temperature, light-sensor adjustment, and classified article storage. Install remote-control equipment to adjust indoor environments in advance via online platforms and achieve on-demand services. Second, establish a digital-service platform. Incorporate all service stations into urban people-livelihood service mini-programs, and realize functions including quick navigation to station locations, online inquiry of service items, real-time monitoring of vacancy status and feedback of material demands, so as to open up convenient service channels. Dynamically manage station equipment, materials, and personnel relying on the digital platform, timely obtain equipment-operation status, and rapidly cope with equipment failures and material shortages [15]. Third, introduce an intelligent-management system. Adopt video surveillance and intelligent statistical equipment to accurately collect data such as visitor flow and service times of stations. Dynamically adjust station functions and services according to such data to realize scientific and precise management, and completely solve the problems of blind and inefficient service in traditional stations.

4. Conclusion

To sum up, the intelligent renovation of service stations for outdoor workers is required to solve practical problems of outdoor workers, improve the urban people-livelihood service system, and promote refined and modernized urban governance. Coordinating spatial layout, upgrading functional configuration, integrating urban styles and features, and promoting intelligent upgrading can effectively solve pain points existing in traditional service stations for outdoor workers, create modern, convenient and urban-style public-service spaces, provide more thoughtful and efficient services for outdoor workers, and continuously enhance outdoor-worker groups' sense of gain, happiness and sense of belonging.

Disclosure statement

The author declares no conflict of interest.

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