

A Study on Renewal Strategies for the Stock of Older Urban Neighborhoods Based on People's Livelihood Orientation -Take Changzhou Jintan District Second Culture Village (South Village) Renewal and Reorganization as an Example

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Abstract: As China's urbanization level surpasses 60%, the country has entered the latter stage of urban development. In this phase, "stock-type" planning and design have become central to the renovation of old urban districts, which are now significant livelihood and development projects. This paper presents a case study of the transformation of two villages in Jintan District, Changzhou City. The project focuses on three main objectives: "livelihood-oriented development, long-term operation, and solving practical problems." The goal is to create a better community with improved infrastructure, comprehensive supporting facilities, and dedicated property service centers. This study serves as a reference for optimizing the social and spatial structure of old neighborhoods, promoting their transformation and development, tapping into internal potentials, and enhancing land value.

Keywords: stockrenewal; livelihood; aging-friendly; Community Governance; Infrastructure Improvement

1. Introduction

After the reform and opening up in 1978, China embarked on the largest and fastest-growing urbanization process in its history, achieving remarkable progress. By 2023, the urbanization rate reached 65.2%, signifying that China has begun to simultaneously implement both incremental and stock planning. Drawing from the experiences of urbanization in other countries, China's urbanization process is gradually slowing down, shifting from rapid expansion to intensive development. The focus of urban construction has transitioned from real estate-driven growth to the renewal of existing urban areas, emphasizing stock enhancement and quality improvement to elevate the overall quality of cities^[1].

Residential areas are fundamental units of urban development and play a crucial role in a city's living organism. Old residential districts, often located in the heart of cities, are integral to sustainable urban development. In the context of urban planning transformation, promoting the renewal of these districts is essential for improving the utilization of existing resources. In 2020, the General Office of the State Council issued the Guiding Opinions on Comprehensively Promoting the Renovation of Old Communities in Urban Areas, aiming to meet people's aspirations for a better life, benefit the population, and stimulate domestic demand^[2].

The transformation of old urban districts is vital for enhancing urban quality and renewal, and it is a fundamental aspect of modernizing community governance systems and capabilities. This transformation should be seamlessly integrated with efforts to strengthen grassroots party organization, establish residents' self-governance mechanisms, and develop community service systems. It is important to enhance residents' participation mechanisms, linking them with renovation efforts to establish a cooperative leadership model involving grassroots party organizations, community residents' committees,

owners' committees, and property service enterprises ^[3]. This collaborative approach ensures the maintenance and renewal results are sustained, fostering a robust long-term community management system and promoting the scientific and systematic construction of the urban governance system.

2. Characteristics of the renewal of the stock of old urban neighborhoods

Due to their own factors, "stock-type" old urban neighborhoods are mainly characterized by the following features:

2.1 Retention of improvement-based

With the process of large-scale urbanization, large areas of low-rise and dangerous buildings in cities have become rare, with most existing structures being those constructed in the 1980s and 1990s. These low-rise, multi-story buildings, built during a period of economic development, are generally of high density and do not suffer from significant quality issues. This makes demolition and relocation challenging and less feasible. Furthermore, the implementation of laws and regulations such as the Property Law and the Regulations on the Administration of Urban Housing Demolition and Relocation has made demolition and relocation more difficult ^[4]. Consequently, the urban renewal model of large-scale demolition and reconstruction is now seldom possible.

For these older urban neighborhoods, renewal strategies such as preservation and improvement are the primary viable options.

2.2 Numerous existing problems

Constrained by factors such as building age, environmental conditions, higher-level planning requirements, and actual usage, "stock-type" old urban neighborhoods typically face numerous challenges. These include outdated or insufficient housing and municipal facilities, inadequate road infrastructure, poor environmental landscapes, and substandard management ^[5]. Additionally, these neighborhoods often suffer from availability issues and hidden safety hazards (see Figure 1). The manifestation of these problems varies among different households, leading to a diverse range of issues that complicate the renewal and transformation of old neighborhoods.

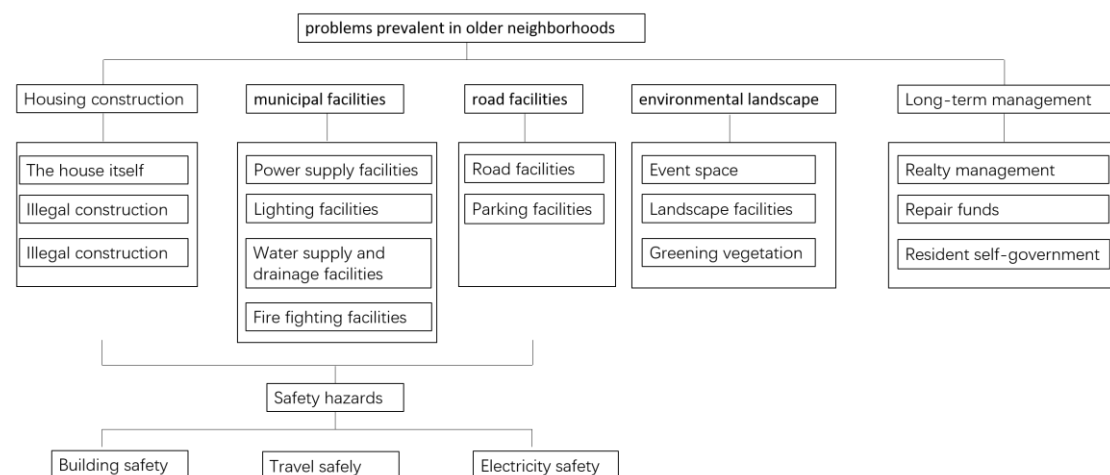


Figure 1 List of problems prevalent in older neighborhoods

2.3 Ageing of the resident population

From a socio-demographic perspective, old urban neighborhoods are characterized by a high aging rate and generally low household income. Due to the physical limitations associated with aging, older residents have specific needs for community and surrounding environments and service facilities. Outdoor activities such as exercise, socializing, and grocery shopping are particularly important for them. Yoshie Yagita of Japan believes that at the beginning of the decline in the cognitive and physical

abilities of the elderly, housing modification or relocation should be carried out according to their behavior^[6]. However, old communities often lack necessary activity spaces and social facilities for the elderly, presenting significant challenges to neighborhood transformation.

Many elderly residents remain in these older neighborhoods due to a strong attachment to their community or financial constraints that prevent them from moving to newer areas with better infrastructure^[7]. As they age and experience physical decline, their need for community services increases, and their connection to the community deepens. Community-based elderly services provide localized, relevant, interactive, and humane support, fostering a sense of identity and belonging among residents. This strong sense of belonging contributes to the elderly's mental well-being, enhances neighborhood interaction, and promotes overall health^[8].

Furthermore, the development of community-based elderly care services, the establishment of service centers for the elderly, and the shift from traditional family-based care to community-based care are crucial. Increased investment in community recreational facilities and the development of recreational, sports, educational, and technological activities tailored to the elderly are essential for creating age-friendly communities and promoting age-adapted transformations of community environments.

3. Planning priorities for the renewal of the stock of old urban Neighborhoods

In practice, because of the characteristics of "stock" urban communities, renewal planning generally focuses on the following aspects.

3.1 Focusing on people's livelihoods and improving the environment

The main problem in China's old neighborhoods is the disconnect between people's growing demand for modernized living and their current living environment. To address this issue, we must focus on people's needs, prioritize livelihood improvements, and enhance the environment. As China's urbanization process deepens, livelihood issues have become central to urban life, with the government placing significant emphasis on addressing these concerns as part of its service-oriented functions. Therefore, rationally addressing livelihood issues is a major focus of renewing "stock-type" old neighborhoods^[9].

In the renewal process of old districts, livelihood issues often involve housing construction, ancillary facilities, road infrastructure, environmental landscape, long-term management, and safety hazards. To effectively address these problems, the renewal of old districts needs to be comprehensively considered from several aspects:

- 1) Building Safety Inspection: Strengthen the residential function by ensuring all buildings meet safety standards.
- 2) Removal of Illegal Structures: Create new public spaces by removing unauthorized constructions.
- 3) Integration and Optimization: Integrate old communities and optimize public transport to enhance connectivity.
- 4) Improvement of Public Facilities and Services: Upgrade and expand public facilities and services to meet modern needs.
- 5) Beautification and Activity Venues: Enhance the community environment by adding green spaces and activity areas.
- 6) Strengthening Property Management: Maintain the community environment through robust property management practices.

By addressing these areas, we can bridge the gap between the current living conditions and the

residents' aspirations for modernized living, ultimately improving the quality of life in old neighborhoods.

3.2 Focusing on public opinion and collaborative transformation

The renewal of "stock-type" old neighborhoods is closely related to the residents living in them. It is essential to involve residents in the planning process to ensure that the renewal programs meet their actual needs and to avoid mistakes that could negatively impact the community. Public participation should be integrated throughout the entire planning process.

- 1) Preliminary Research Stage: Engage residents through community visits, questionnaires, seminars, and other methods to gather comprehensive feedback and understand their needs. This approach ensures that the renewal plans are pragmatic and address real issues.
- 2) Program Planning Stage: Use social publicity, on-site communication, and thematic seminars to explain the planning program. Actively listen to residents' views and feedback, and make timely improvements to meet the needs of various stakeholders.
- 3) Implementation Stage: Station designers on-site to work closely with the project owners and construction teams, negotiating and resolving issues as they arise.

This "open" planning method involves the participation of planning and design units, the government, the community, and the market, ensuring upward and downward coordination and considering the interests of all parties. By fostering collaboration and communication, the renewal process can effectively address residents' needs and create a more livable and sustainable community^[10].

3.3 Comprehensive remediation and detail weaving

Most "stock-type" old neighborhoods have limited potential for large-scale renovation due to their small size and constrained sites. As a result, the planning programs often focus on detailed refinements rather than extensive overhauls. Therefore, the renewal program should emphasize meticulous attention to detail, effectively utilizing the concept of "making a dojo in a snail shell." ^[11]

- 1) Exploring Potential: Thoroughly examine all aspects of the neighborhood to identify and utilize any remaining space for renovation and upgrading. This includes maximizing small, overlooked areas to enhance functionality and aesthetics.
- 2) Rational Planning: Use a variety of design techniques to plan existing spaces efficiently according to local conditions. This involves tailoring solutions to meet diverse functions and improving space utilization, ensuring that every available inch is optimized.
- 3) Low-Carbon and Energy-Saving Solutions: Incorporate environmentally friendly practices into the transformation process. Examples include the unified use of sound and light-controlled induction energy-saving ceiling lamps and permeable concrete to alleviate flooding issues in residential areas. These measures not only enhance the living environment but also contribute to sustainability.

By focusing on these strategies, the renewal of "stock-type" old neighborhoods can effectively address the limitations of small sites, improve living conditions, and promote sustainable urban development.

4、Renovation Case--Changzhou Jintan District Culture Second Village Renovation

The transformation of Culture 2 Village (South Village) in Jintan District has significantly enhanced its appeal and functionality through several key strategies:

- 1) Enhancing Architectural Characteristics: By leveraging the district's existing architectural features, the transformation has enhanced building structures while emphasizing community culture themes. Intelligent facilities have been integrated to showcase spiritual

civilization construction and humanistic care.

- 2) **Restoring Green Environment:** The project focused on restoring the district's green spaces and clearly defining functional land attributes. This approach not only beautifies the environment but also preserves and highlights the area's historical and cultural heritage.
- 3) **Promoting Historical and Cultural Richness:** Emphasizing the district's historical and cultural significance, the transformation encapsulates the spirit of sharp innovation. This has positioned the neighborhood as a prominent residential area that celebrates its rich heritage while embracing forward-thinking innovation.

Overall, the transformation of Culture 2 Village exemplifies a holistic approach to urban renewal, blending architectural enhancement, environmental restoration, and cultural promotion to create a vibrant and culturally enriched community.

4.1 Project Overview

The Second Culture Village district is situated in Jincheng Town Street, Jintan District, Changzhou City, Jiangsu Province. This residential area spans a prime location within Jintan District, positioned southwest of the city with a southern view of the Danjin Li Cao River. It is bounded by the West Ring Road to the east and Ximen Street to the north, boasting excellent transportation accessibility. Constructed after 1997, the Second Village (South Village) covers a land area of 52,800 square meters with a total building area of 73,000 square meters distributed across 24 buildings, each consisting of 5 floors (refer to Fig. 2 and Fig. 3). The neighborhood benefits from comprehensive surrounding facilities, offering convenience within its living circles:

- Within a five-minute walking radius, residents have access to essential amenities including bus stops, hospitals, middle schools, elementary schools, and parks.
- Within a ten-minute walking radius, additional facilities such as shopping malls, commercial facilities, city halls, and further transport options are easily accessible, enhancing the neighborhood's livability and convenience.

This strategic location and well-equipped infrastructure make the Second Culture Village district an attractive residential area within Jintan District, emphasizing convenience and quality of life for its residents.



Figure 2 Project Location



Figure 3 Project Overview

Based on on-site analysis, the Second Culture Village district in Jintan District, Changzhou City, exhibits several key characteristics:

- 1) **Age and Condition of Buildings:** The neighborhood was primarily constructed during the early years of development, with buildings and supporting facilities dating back to the 1980s and 1990s. This age suggests that many structures may be outdated or showing signs of aging, requiring renovation and modernization to meet contemporary standards.
- 2) **Development Context:** Built during the initial stages of economic development, the area

features a higher building density and limited public spaces. This development pattern reflects the focus on maximizing residential capacity during the period, leading to denser living conditions and fewer communal areas. The existing facilities may also be inadequate or insufficiently maintained over time.

- 3) **Socio-Demographic Composition:** The neighborhood has a notably high aging rate among its residents, coupled with generally low household incomes. These demographic factors pose challenges for renovation efforts, particularly concerning accessibility issues for elderly residents navigating stairs and other obstacles.

Addressing these aspects requires targeted interventions such as:

- **Renovation and Modernization:** Upgrading outdated buildings and facilities to improve living conditions and meet current standards of safety and comfort.
- **Enhancing Public Spaces:** Creating more communal areas and enhancing existing facilities to cater to the community's recreational and social needs.
- **Accessibility Improvements:** Installing amenities like elevators or ramps to facilitate mobility for elderly residents and others with limited mobility.

By focusing on these areas, the Second Culture Village district can enhance its livability, address aging infrastructure challenges, and improve overall quality of life for its residents.

4.2 opinion poll

Pre-research through a forum combined with questionnaires is a proactive approach to understanding residents' demands and preferences. In the case of the Second Culture Village district, the process effectively recovered 1450 questionnaires from residents. These questionnaires, along with insights gathered from the residents' forum held within the district, provide a rich dataset for statistical analysis. Statistical analysis of the collected data allows for a comprehensive understanding of residents' perspectives on various aspects such as:

- **Housing and Facilities:** Assessing the condition and adequacy of existing buildings, infrastructure, and public spaces.
- **Community Services:** Identifying needs for improved services like healthcare facilities, educational institutions, and recreational amenities.
- **Accessibility and Mobility:** Evaluating challenges related to accessibility for elderly residents and those with mobility issues.

By integrating feedback from both the forum discussions and the questionnaires, urban planners and policymakers can develop targeted strategies and prioritize initiatives that align with the community's priorities. This inclusive approach ensures that the renewal and development plans for the Second Culture Village district are tailored to meet the specific needs and aspirations of its residents. (See Figure 4, Figure 5, Figure 6,)



Figure 4 Community Residents' Symposium

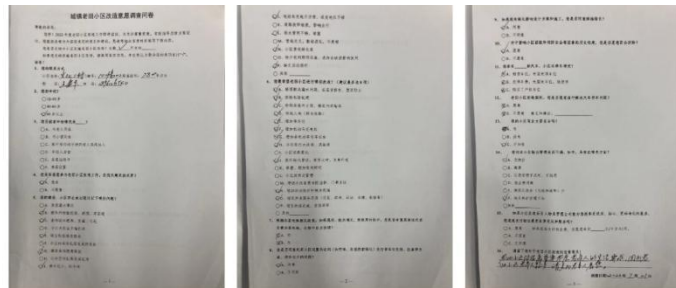


Figure 5 Questionnaire

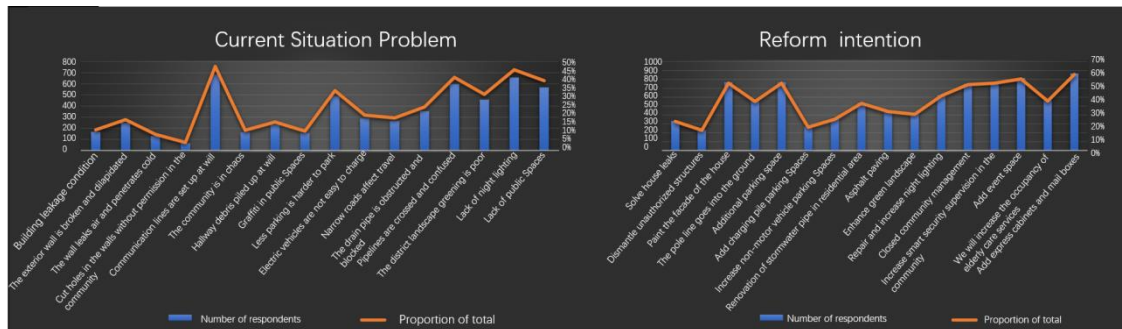


Figure 6 Statistical analysis chart

According to the survey findings, residents of the Second Culture Village district have identified several key issues regarding the community's current environmental state. These include concerns about housing construction, municipal facilities, road infrastructure, and environmental landscaping. Specifically, residents have highlighted the following areas for improvement:

- 1) **Housing Construction:** Addressing issues related to the quality and condition of residential buildings.
- 2) **Municipal Facilities:** Improving various types of pipelines and utility setups to enhance functionality and reliability.
- 3) **Road Facilities:** Enhancing parking facilities to alleviate congestion and improve accessibility within the neighborhood.
- 4) **Environmental Landscape:** Creating more usable spaces for community activities and enhancing greenery and landscaping.

In addition to tackling these immediate concerns, future renovation plans will prioritize safety enhancements through intelligent renovations and focus on long-term management strategies. This approach is crucial given the aging demographic within the residential area, emphasizing the importance of implementing services and infrastructure that cater to the needs of elderly residents.

Overall, the survey underscores the community's aspirations for comprehensive improvements that not only address current infrastructure challenges but also pave the way for sustainable, age-appropriate urban development in the Second Culture Village district.

4.3 Updating strategies and technical routes

Based on the site analysis and public opinion survey, the proposed renewal and renovation of the residential community around the objectives of "livelihood orientation, long-term operation, and solving practical problems" aims to achieve a vision of a well-rounded community with excellent infrastructure, comprehensive living facilities, and efficient property services.

The technical approach to renovation will follow these main steps:

- 1) **Preliminary Investigation and Opinion Collection:** Gather initial information and solicit opinions from residents through surveys and community forums to understand their needs and priorities.
- 2) **Regional Analysis and Planning:** Analyze the neighborhood's location and characteristics deeply to develop a clear regional plan that aligns with community aspirations and urban planning guidelines.
- 3) **Renovation Strategy Development:** Formulate a detailed renovation strategy based on identified needs, focusing on improving building quality, eliminating safety hazards, ensuring reliable infrastructure supply, enhancing transportation and parking facilities, upgrading environmental cleanliness, and facilitating daily life for residents.

- 4) Enhancing Public Spaces: Expand and enhance spaces for public activities, improve the green environment and landscaping, and standardize property management practices to foster a cohesive and sustainable community.
- 5) Establishing Long-Term Mechanisms: Implement measures to sustain the improvements over the long term, ensuring ongoing maintenance, community engagement, and continuous enhancement of services and amenities.

By following this technical route, the renewal project aims not only to address current challenges but also to create a vibrant and sustainable living environment that meets the evolving needs of the Second Culture Village district residents. (See Figure 7)

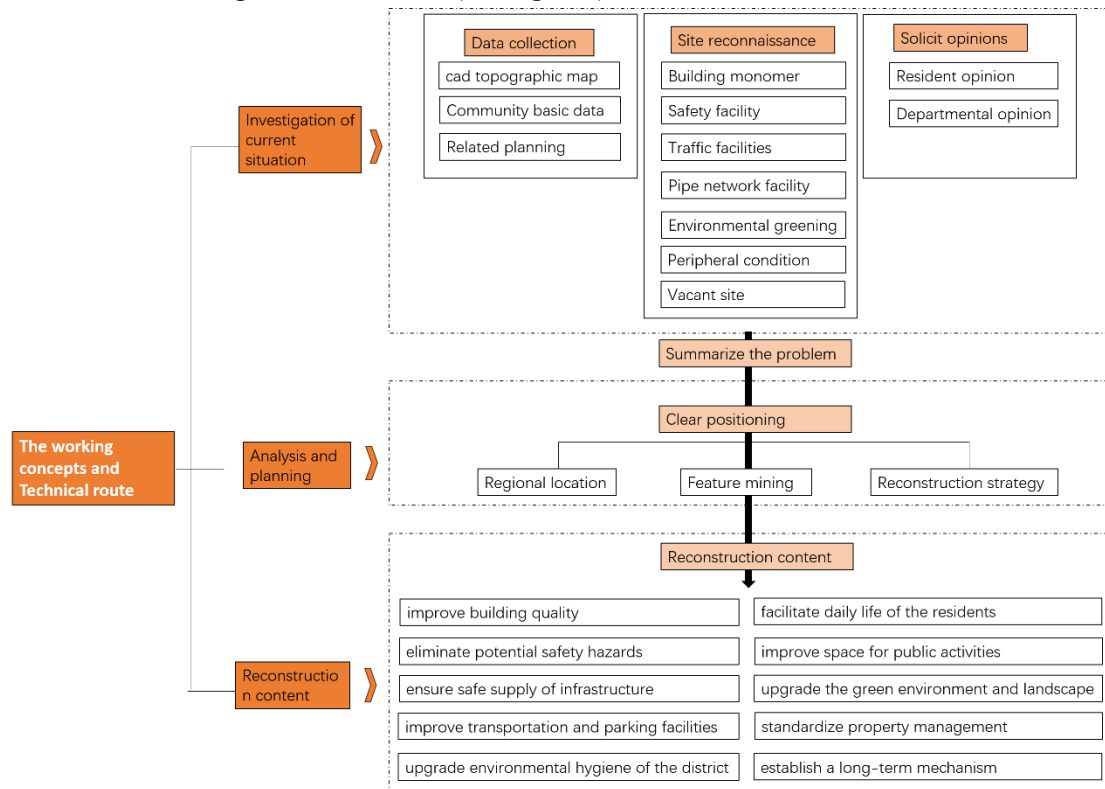


Figure 7 The working concepts and Technical route

There are five attributes of a healthy environment that need to be paid attention to in community transformation: safety, accessibility, sound and sight, mental health, and familiarity^[12]. Therefore, The transformation of old neighborhoods should prioritize enhancing the overall environment through innovative concepts and organic renewal methods. This approach should be centered on meeting the "people's livelihood first" principle, focusing specifically on achieving goals of "cleanliness, orderliness, and safety."

To effectively enhance residents' well-being, sense of accomplishment, and security, the following strategies can be implemented:

- **Cleanliness:** Implement precise measures to improve environmental hygiene, including regular cleaning schedules, waste management systems, and beautification projects such as landscaping and greenery enhancements.
- **Orderliness:** Establish policies and initiatives to maintain orderly public spaces, including clear signage, organized parking areas, and regulations for community upkeep.
- **Safety:** Prioritize safety with measures such as upgrading infrastructure for better lighting, surveillance systems, and ensuring structural integrity through renovations that eliminate

safety hazards.

By focusing on these goals and implementing targeted actions, the transformation can significantly enhance residents' overall quality of life. This approach not only improves physical aspects of the neighborhood but also fosters a sense of pride and security among community members, contributing to a sustainable and thriving living environment.

4.4 Specific updates

4.4.1 Boutique Architecture

The Culture 2 Village (South) neighborhood primarily consists of residential buildings, carports, commercial facilities, service facilities, fences, and other structural elements. Due to the prolonged construction period, some building facades have aged and lack maintenance and repairs, leading to potential safety hazards. Therefore, three aspects of upgrading are being considered: building safety, building appearance, and building security.

(1) building safety

For older constructions with evident damage and structural issues in residential and public buildings, thorough inspections are necessary. Recent constructions require regular inspections to ensure the safety of residential buildings and to address technical risks through specific remediation programs.

(2) architectural style

To address issues of strong color contrasts, indistinct color levels, and unclear color functionality in the residential area, propose an overall distinctive planning concept that emphasizes structural reinforcement and functional differentiation. Increase color intensity appropriately to create a humanistic, soft, and warm environment. During the renovation of building facades, consider and renew the modern style observed in surrounding commercial office buildings and neighboring community facades (see Fig. 8 and Fig. 9). Remove illegally erected temporary structures from building facades and install grills to cover outdoor elements such as air-conditioning units.

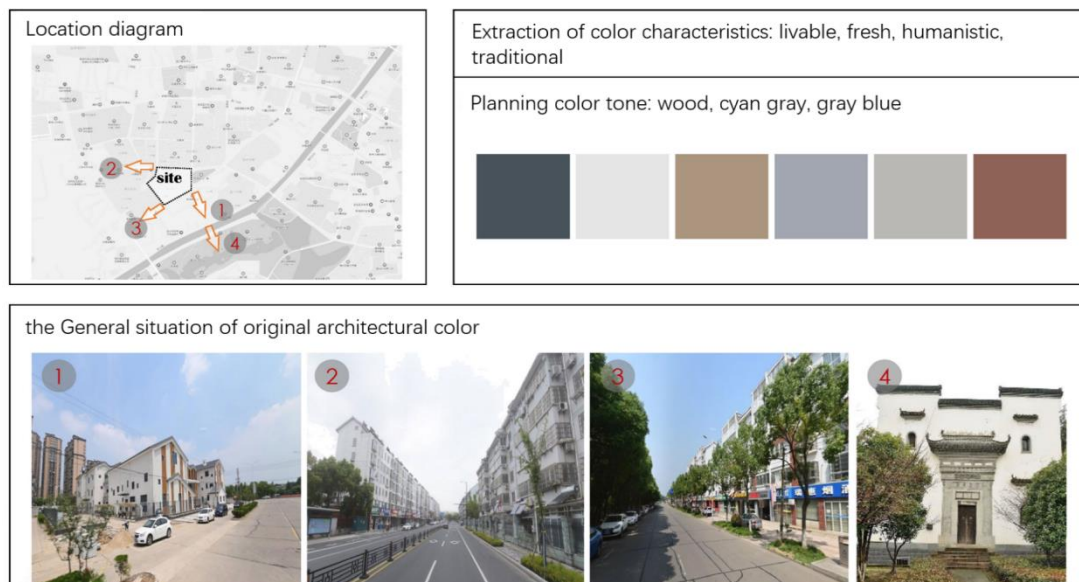


Figure 8 the General situation of original architectural color

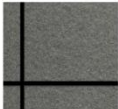
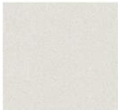
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Figure 9 Recommended architectural color palette

(3) Building Performance

Remodel and upgrade building performance throughout the residential area, including roofs, building and site entrances, stairwells, and the installation of elevators to improve energy efficiency.

- 1) **Building roofs:** Inspect all roofs, repair damaged and leaking parts as necessary, lay waterproof roll-roofing material for durability, replace damaged tiles, and install lightning protection facilities.
- 2) **Entrance to buildings and sites:** Check unit door entrances for step height variations, add barrier-free ramps where needed, and ensure proper barrier treatments in public activity spaces and pedestrian walkways (see Figure 10).
- 3) **Stairwell renovation:** Install new floor walls, non-slip steps, step warnings, reinforce handrail railings, add flip-up seats, and organize floor pipes and wires (see Figure 11).
- 4) **Adding elevators:** Integrate elevators at unit stairwells, blending them with existing staircase platforms for age-appropriate renovations (subject to resident approval).
- 5) **Building energy efficiency:** Upgrade windows to energy-saving, heat-preserving types, replace hallway lights with unified sound and light-control induction energy-saving ceiling lamps, and install new LED energy-saving door lamps.

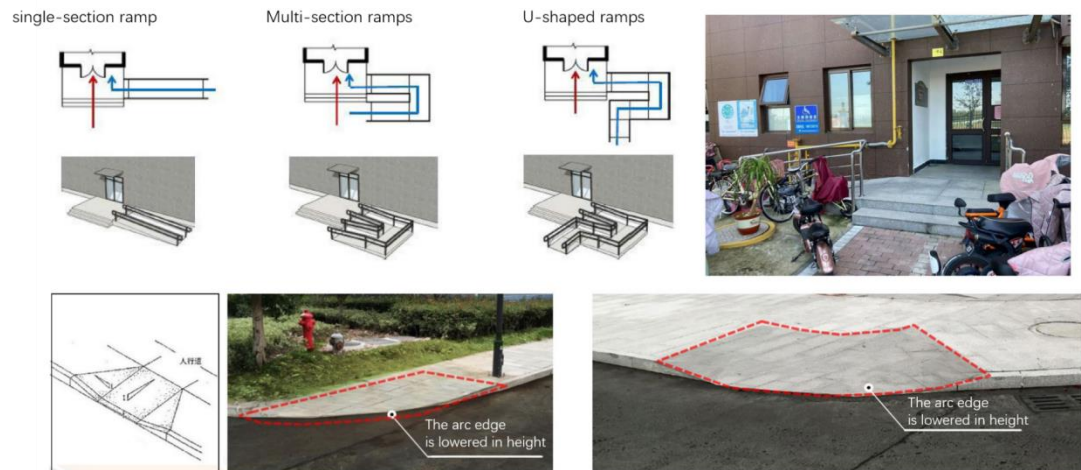


Figure 10 the Building and Site Entrance

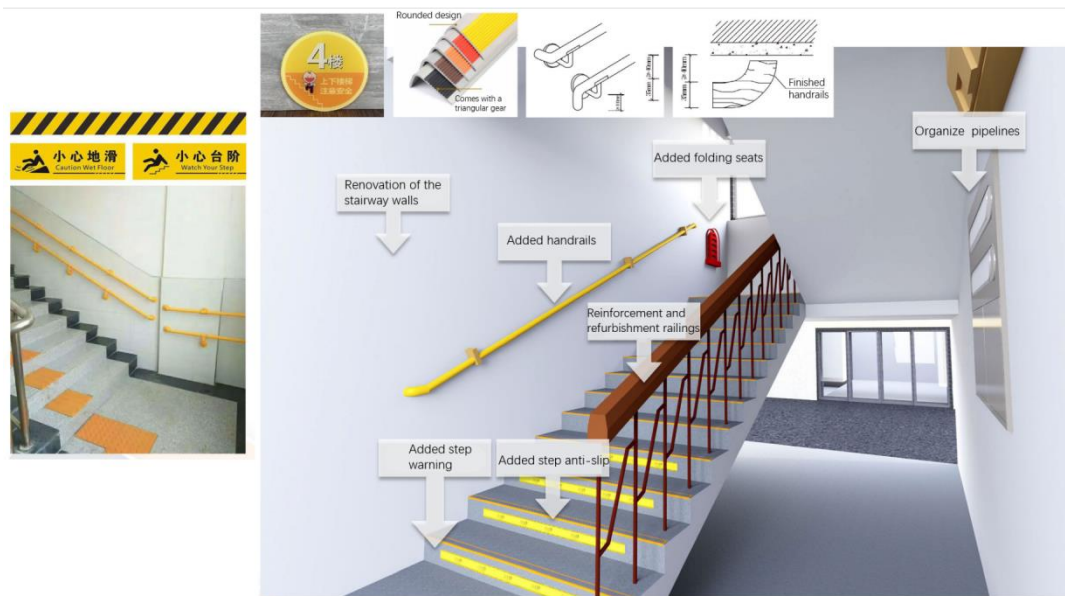


Figure 11 Stairwell Remodeling

(4) Entrance and Exit Updates

Set up a manned guard management office at primary residential entrances and exits, implementing separate flows for pedestrians and vehicles to optimize functionality. Further optimize functional divisions at entrances by configuring positions for personnel registration, courier cabinets, and community announcements. Repair and renovate secondary entrances and exits to maintain an aesthetically pleasing appearance. (See Figure 12)



Figure 12 Residential Entrance and Exit Updates

4.4.2 Sophisticated environment

(1) public center

The renovation reviewed the existing landscaping, retaining the better-growing trees, removing some mid-level shrubs and small trees, and replenishing ground cover varieties. It enhanced important nodes and unit building entrance vegetation planting spaces. The plan advocates for local vertical greening, enriching vertical greening spaces. studies have shown that vertical greenery in suitable places, such as around community traffic, reduces overall community noise by 5 to 10 decibels^[13]. Specialized horticultural personnel will be assigned to maintain and manage community greenery to ensure the ornamental quality of residential landscaping.

(2) Remodeling of event venues

Utilize the vacant space in the community to renovate the activity space, covering a total area of 694 square meters. Ensure the ground is smooth and non-slippery. Equip the area with fitness equipment, shaded corridors, resting seats, and other facilities. The activity venues will have hardened, smooth, and non-slip surfaces and be equipped with fitness equipment, resting seats, sheltered corridors, sand pits, slides, and other amenities suitable for children and the elderly for leisure and fitness. The activity venues will comply with barrier-free design requirements and age-friendly standards. (See Figure 13)



Figure 13 Activity Venue Renovation - Community Parlor

(3) Sponging

Integrate the sponge city design concept into the green land transformation of the district by utilizing water absorption, water storage, water seepage, and water purification methods to enable the free migration of rainwater within the residential area and alleviate local flooding ^[14]. To meet the requirements of a sponge community, replace traditional hard surfaces with new road paving technology, such as permeable concrete, to alleviate waterlogging and improve the residential environment. (see figure 14)



Figure 14 Sponge transformation

(4) Community Furniture Renewal

The outdoor seating facilities in the district should be designed with the elderly in mind, providing seats with backrests and armrests ^[15]. The seating height should not be too high (recommended 35-40 cm). It is advisable to use wood or other warm materials and to avoid using stone, metal, and other materials with low specific heat capacity.

4.4.3 improve facilities

Improve and upgrade relevant facilities in the residential area, focusing primarily on municipal and transportation facilities.

(1) Municipal operating facilities

- 1) **Electricity and Communication Poles Underground:** The strong and weak power lines in the district should be buried underground to enhance the appearance of building facades and improve electrical safety. Additionally, the district's power distribution and communication boxes should be covered with grilles that meet safety and aesthetic requirements.
- 2) **Public Lighting Facilities Renovation:** Based on the actual situation, increase lighting facilities along main and side roads to cover a 30-meter radius for each street lamp. This will

enhance safety for residents during nighttime activities.

- 3) **Updating of the Water Supply Pipe Network:** Renovate, repair, or replace water supply pipes that do not meet policy requirements or are problematic due to age. Each household should have a separate water meter, with centralized readings for sub-meters recommended in outdoor public areas^[16].
- 4) **Drainage Facilities Renovation – Sewage and Rainwater:** Focus on renovating sewage and rainwater pipe networks. Implement low-impact development strategies for rainwater networks, such as integrating paving with activity squares and parking lots, connecting rainwater standpipes indirectly to drainage channels, and reducing hard paving.
- 5) **Gas Pipeline Update:** Overhaul existing galvanized steel gas pipelines. Assess whether to upgrade to corrosion-resistant PE (polyethylene) pipes. Add a cathodic protection system to seamless steel pipes within the district and improve gas pipeline markings.
- 6) **Improvement of Sanitation Facilities:** Set up separate garbage collection points and provide clear guidance on garbage classification to gradually increase residents' awareness of proper waste sorting.
- 7) **Consumption Facilities Renovation:** Ensure the personal safety of residents by establishing emergency access routes and placing fire signs along main emergency routes. Mark no-parking lines to facilitate emergency vehicle access to any residential building. Propose increasing the number of internal hydrants and establishing two secondary micro-fire stations

(2) transportation facilities

① Road Facility Improvement

The main entrances of Culture 2 Village (South) are located on the north and south sides of the district, which are two-way roads without any road gates. Pedestrian entrances and exits are situated in the southern part of the settlement, exclusively for pedestrian access. The internal roads in the district vary in width from 2.5 to 6 meters. Previously, the community did not have a designated pedestrian and vehicle traffic system.

The planned renewal and renovation of the roads will involve reorganizing and rationally planning the traffic and parking system. This will include widening narrower road surfaces, appropriately laying out pedestrian walkways, and ensuring smooth motor vehicle and pedestrian traffic flow and safety.

Details include:

- Comprehensive renovation of all district roads, integrating rainwater and sewage systems.
- Paving main roads with asphalt and redrawing traffic markings after renovation.
- Adopting low-noise or noise-reducing road surfaces for motorized roads. If asphalt surfaces are used, install speed limit signs and road speed reduction facilities^[17].
- Adding prominent speed limit signs, warning signs, and directional signs at entrances, exits, and public service facilities. Set up appropriate road traffic signs and markings, including convex corner reflectors at intersections of motorized and non-motorized roads within the district (see Figures 15 and 16).

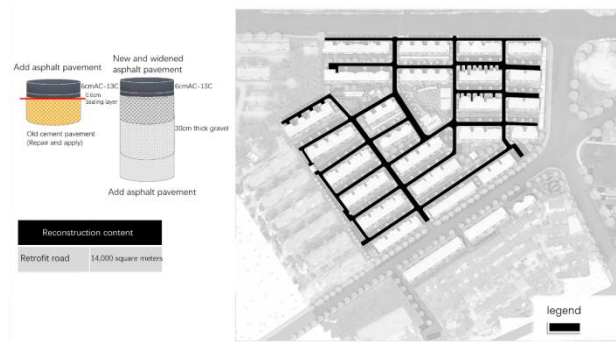


Figure 15 Roadway Facilities Update



Figure 16 Improvements to Traffic Sign Lines

② Increase parking facilities

- **Motor Vehicle Parking Spaces:** Reorganize and optimize public transportation sites by reducing local greening and increasing parking spaces appropriately. Currently, Culture 2 Village (South) has 280 parking spaces. After renovation, the total will increase to 475 parking spaces, including 68 designated for electric vehicle charging.
- **Non-Motorized Vehicle Parking Spaces:** Install 10 non-motorized parking facilities in combination with building entrances, exits, and small open spaces. Charging services will be unified through code-scanning or card payment methods to maximize residents' satisfaction with parking.
- **Parking Information Sharing:** Establish a parking information sharing platform outside the stores along the district's streets to facilitate staggered sharing of parking spaces. (See Figures 17 and 18)

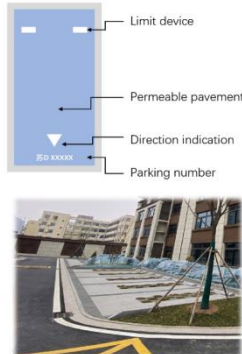


Figure 17 Parking Facility Upgrade 1



Figure 18 Parking Facility Upgrade 2

4.4.4 Habitability services

(1) Construction Service Center

Utilize Property Management Rooms: Convert property management rooms into new community service centers. The community property service center will include property management offices, cultural activity rooms, and similar facilities. The community senior service center will be equipped with meal kitchens, activity rooms, day care centers, and other amenities (see Figure 19).



Figure 19 Community service centers

(2) Renovation of postal facilities

Overhaul Newspaper Boxes and Delivery Facilities: Overhaul existing newspaper boxes and establish a regular testing mechanism to ensure they are functioning properly. Based on residents' needs in the future, add additional express cabinets to ensure that each building's residents can conveniently receive their deliveries.

(3) Building Intelligent Systems

The intelligent community integrated management service platform primarily serves four types of groups: community residents, property management staff, neighborhood community committees, and government departments. (See Figures 20, 21 and 22.) Research and practice have proved that the intelligent environment is conducive to improving the convenience of elderly life and expelling loneliness^[18].

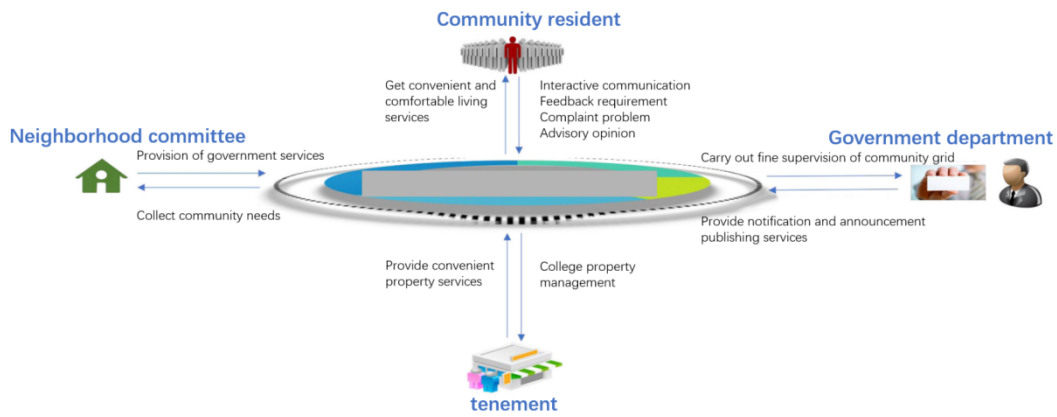


Figure 20 Integrated Management Service Platform for Intelligent Communities 1

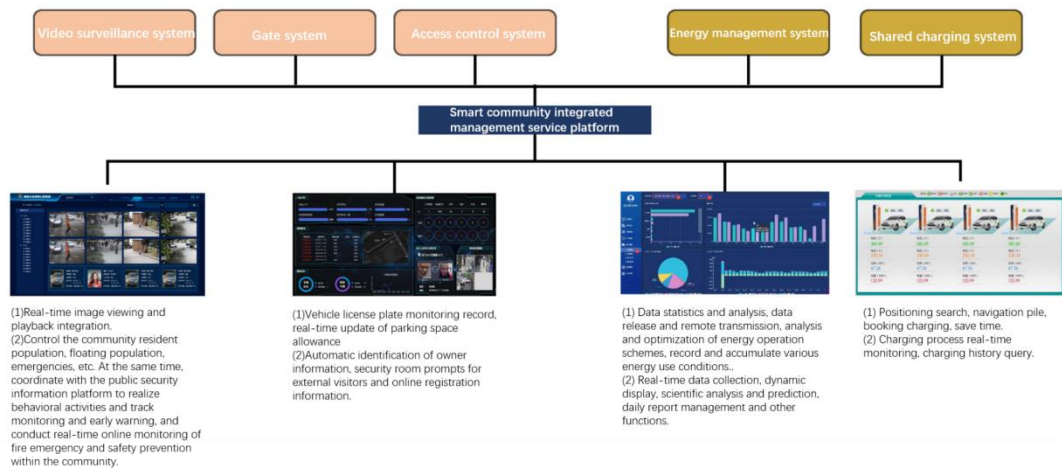


Figure 21 Intelligent Community Integrated Management Service Platform 2



Figure 22 Intelligent Community Integrated Management Service Platform 3

4.4.5 Long-term management

(1) owner's self-governance

Street and community party committees should take a leading role in introducing property

management companies and promoting the establishment of industry committees within neighborhoods. These committees should effectively engage and unify residents to oversee property companies, ensuring they fulfill their service contracts. They will serve as deliberative and executive bodies, addressing collective affairs of the owners and developing a community residents' code of conduct.

Additionally, strengthen community party organizations and the guidance and supervision provided by community committees. Focus on the formation and replacement of district owners' committees as a key aspect of grassroots party-building efforts. Gradually increase the proportion of party members in the owners' committees to at least half. Establish a mechanism for the collection, use, and renewal of special maintenance funds.

(2) community building

1. Fostering Cultural Development:

Formulate and publish community residents' conventions, and build public cultural service brands that reflect community characteristics. Promote public opinion through multiple media channels and actively foster a creative atmosphere.

2. Provision of Property Services:

Enhance community property services through the following measures:

- Improve the level of community property services by implementing market-oriented, professional property management.
- Strictly adhere to property service contract agreements and standardize the property management system.
- Develop a smart property management service platform with clear business processes and norms.
- Provide customized products and personalized services, including one-click reservations and door-to-door services.
- Establish modern information platforms, such as WeChat public accounts and groups, to regularly consult residents' preferences and provide feedback on processing results.
- Regularly release relevant information on community management, establish a voting system for residents on major community matters, and build a community volunteer service platform.

4.5 Evaluation of results

Referring to the evaluation criteria for beautiful and pleasant residential areas in Jiangsu Province, various indexes for residential area renewal and transformation have been assessed. The full score is 100, and the final score achieved is 97. (See Table 1)

Evaluation index of beautiful livable residential area in Jiangsu Province						
Evaluation indicators		Serial number	Evaluation content	score	score	Points for scoring
Housing construction (20points)	building safety (3 points)	1	Establishment of a mechanism for the timely detection and disposal of potential safety hazards.	1	1	1 point for compliance.
		2	The house and facilities and equipment are free from safety hazards.	2	2	2 points for compliance.
		3	The building has achieved Star Green Building or Class A residential standards, or has implemented building energy efficiency retrofits.	3	3	3 points for compliance.
		4	Widespread use of renewable energy facilities and energy-efficient equipment in settlements.	2	2	2 points for compliance.
	Architectural style (7 points)	5	The addition of elevators to multi-story residential buildings has been carried out, or there are plans, programs, and measures to implement the addition of elevators.	3	1	1 point for each additional unit, up to a maximum of 3 points; not installed but 1 point for plans, programs, measures
		6	The building entrances meet the requirements of barrier-free design specifications; corridors, stairwells, etc. are equipped with safety handrails and flip-flop resting seats, and ensure that they are safe and stable, and that the components are complete.	2	2	Compliance with the requirements of 2 points, there is a discrepancy of 0.5 points, deducted until the end.
		7	The installation of pipes, air-conditioning units, security nets, drying racks, etc. on the building facade is orderly, beautiful and firm.	2	2	2 points for compliance.
		8	The gates and fences of the district are novel, beautiful and safe, and are in harmony with the overall architectural style.	1	1	1 point for compliance.
		9	No illegal structures in the settlements. Public areas are free of littering and graffiti.	2	2	Compliance with the requirements of 2 points, there is a discrepancy of 0.5 points, deducted until the end.
		10	Building colors, decorations, wall paintings, etc. are coordinated with the overall style of the area, reflecting the cultural and style characteristics of the settlement.	2	2	2 points for compliance.
Environmental Landscape (20 points)	Natural landscape (10points)	11	The width of the public green space in the residential area is not less than 8 meters, and the width of the human body is not less than 5 meters. The average area is not less than 0.5 square meters, and the old neighborhoods are not as old as they used to be. Not less than 0.35 square meters.	2	2	2 points for compliance.
		12	No encroachment on public green space. Plants are well-mixed, well-maintained and seasonally varied.	2	2	2 points for compliance.
		13	Planting meets residents' sunlight, lighting, ventilation, and safety requirements, as well as the shade needs of the residential slow-moving system and recreational areas.	2	2	2 points for compliance.
		14	Make full use of rooftop decks, setbacks, walls, fences and other areas for landscaping and greening.	2	2	2 points for compliance.
	Human environment (10 points)	15	The water feature design is scientifically sound and operates properly. The water quality of the landscape water body meets the requirements.	1	0	2 points for compliance.
		16	Reasonable installation of bioretention facilities such as rain gardens, grass-planted swales, and recessed green spaces.	1	1	1 point for compliance.
		17	Residential areas have activity areas for children and the elderly with a land area of not less than 170 square meters. The ground is smooth and non-slip, and is equipped with fitness equipment, fitness trails, resting seats and other facilities, as well as sandboxes, slides and other facilities suitable for children's and the elderly's recreation and fitness.	3	3	3 points for compliance.
		18	Activity venues, public green areas and fitness facilities in the residential area meet the requirements of barrier-free design and ageing-friendly norms.	3	3	Compliance with the requirements of 3 points, there is a discrepancy of 0.5 points, deducted until the end.
		19	Landscape sketches, flower platforms, porches and pavilions, paving and other scales and volumes are moderate, and the color and material are reasonable and suitable with the surrounding environment. Outdoor furniture such as rest seats, outdoor speakers, landscape lighting, etc. are reasonably set up, easy to use and beautifully modeled.			2 points for compliance.
		20	The district is equipped with a floor plan schematic, and building signs, door signs, barrier-free facilities, fire escapes, danger warnings and safety evacuation signs are set up reasonably and clearly.			2 points for compliance.
Infrastructure (25 points)	Municipal facility (9 points)	21	Water supply, power supply, gas supply, heating, communications, radio and television equipment and its pipelines are reasonably arranged, with hidden measures, pipeline safety, standardization, neatness and order, easy to repair, renovation and replacement.	2	2	2 points for compliance.
		22	Water, electricity and gas meters adopt relatively centralized and remote meter reading systems, or IC card electronic metering systems. Wired broadband network has full coverage, wireless network realizes on-demand access, and high-definition digital TV network access capacity has full coverage.	2	2	2 points for compliance.
		23	Settlements implement rainwater and sewage diversion, no rainwater and sewage mixed connection; drainage system is perfect and smooth, no waterlogging.	3	3	3 points for compliance.
		24	Public areas are free of exposed garbage and sewage. Separate garbage collection is implemented and household garbage is removed on a daily basis.	2	2	2 points for compliance.
	transportation facilities (5 points)	25	Motor vehicle lanes and sidewalks are provided in accordance with the requirements for the separation of pedestrian and vehicular traffic. Main roads meet the requirements for barrier-free design.	2	2	1 point for compliance with pedestrian and vehicle segregation requirements. Compliance with barrier-free facilities. One point is awarded for the calculation of requirements.
		26	Traffic instructions and traffic facilities are reasonably set up, and the road surface is smooth and free of damage to meet the requirements for firefighting, ambulance (disaster relief) passage and temporary stopping.	2	2	Compliance with the requirements of 2 points, there is a discrepancy of 0.5 points, deducted until the end.
		27	Permeable pavers are used for motor vehicle lanes, sidewalks, parking lots and plaza paving.	1	1	1 point for compliance.
	parking facility (6 points)	28	Motor vehicles are parked in an orderly manner, parking spaces are set up in a scientific and reasonable manner, conditions are reserved for the installation of motor vehicle charging piles, and accessible parking spaces are available.	2	2	Compliance with the requirements of 2 points, there is a discrepancy of 0.5 points, deducted until the end.
		29	Non-motorized vehicles are parked in an orderly manner, the parking lot is set up in a scientific and reasonable manner, the nonmotorized shed is in a beautiful	3	3	Compliance with the requirements of 3 points, there is a discrepancy of 0.5 points, deducted until the end.
		30	form and color coordinated, and the charging control facilities are equipped with the	1	1	1 point for compliance.
Safety and disaster prevention (5 points)	Safety and disaster prevention (5 points)	31	Fire fighting facilities and electrical fire alarm devices are set up in accordance with the prescribed requirements, regularly repaired and maintained, and records are complete.	2	2	2 points for compliance.
		32	There are video surveillance system, perimeter alarm system, access control system, parking lot access management system, patrol system, elevator operation monitoring and other intelligent security systems.	2	2	2 points for compliance.
		33	There is an emergency call system, and it is effectively linked with the entrance control system, gas alarm, intrusion alarm and other systems.	1	1	1 point for compliance.
		34	The construction area of the property management room is not less than 100 square meters and not less than 4‰ of the total construction area of the property.	2	2	2 points for compliance. 1 point for noncompliance, if any.
	Community service (4 points)	35	Equipped with intelligent express cabinets, mail boxes and other express facilities.	1	1	1 point for compliance.
		36	Reasonably set up cultural publicity column, convenient information release column, popular science window, advertising column and other facilities, and the style is coordinated with the overall style of the residential area.	1	1	1 point for compliance.
		37	The community has a community service station with a building area of no less than 600 square meters (including community service hall, police room, community neighborhood committee office, cultural activity room, Party and mass activity center, etc.).	1	1	1 point for compliance. 0.5 point for noncompliance, if any.
		38	There are multi-functional sports venues with a land area of not less than 800 square meters in and around the community.	1	1	1 point for compliance.
	Community Public service (6 points)	39	There are community health service stations with a construction area of no less than 120 square meters in and around the community, which can provide health consultation, maternal and child health care, elderly health care, chronic disease prevention and treatment and other services.	1	1	1 point for compliance.
		40	There are public toilets with a building area of not less than 30 square meters in and around the community.	1	1	1 point for compliance.
		41	There is a kindergarten with a building area of no less than 3150 square meters in and around the community, which is set in a lot with abundant sunshine, close to public green space and convenient for parents to pick up and drop off, and has an independent courtyard and entrance.	2	2	2 points for compliance.
		42	There are day care centers for the elderly with a building area of no less than 350 square meters in and around the community, providing day services such as meal assistance, health care and rehabilitation.	2	2	2 points for compliance.
Ancillary services (15 points)	Community Service (5 points)	43	There are nurseries with a building area of not less than 200 square meters in and around the community, providing childcare services.	2	2	2 points for compliance.
		44	There are commercial outlets in and around the community (including general supermarkets/convenience stores, pharmacies, laundries, barber shops, etc.).	1	1	1 point for compliance.
		45	Owners' committees or property management committees have been set up to carry out owners' self-governance.	2	2	2 points for compliance.
		46	The proportion of party members of the trade committee shall not be less than half.	1	1	1 point for compliance.
	owner's Self governance (5points)	47	A mechanism for collecting, using and renewing special maintenance funds has been established.	2	2	2 points for compliance.
		48	Implement market-oriented professional property service management, provide customized products and personalized services, and realize one-click appointment and door-to-door service.	2	2	2 points for compliance.
		49	A smart property management service platform has been built. Sound property management system, business process disposal standard.	2	2	2 points for compliance.
		50	The property management service level has reached the provincial and municipal demonstration property management project standards.	2	2	2 points for reaching the provincial demonstration standard and 1 point for reaching the municipal standard, and no duplicate scores.
	Community Building (5points)	51	The community has a "four-in-one" party building platform, and a joint meeting is held at least once a month.	1	1	1 point for compliance.
		52	Set up volunteer service team and organize volunteer activities regularly.	1	1	1 point for compliance.
		53	Carry out the creation of green communities and meet the standards, and solicit public opinions during the whole construction process and publicize them in a timely manner.	2	2	2 points for compliance.
		54	There is a mechanism for preventing and responding to emergencies, regularly organizing evacuation drills and carrying out fire safety publicity.	1	1	1 point for compliance.
Governance (20 points)	Estate management (5points)	55	Developing and publishing community covenants.	1	1	1 point for compliance.
		56	Building public cultural service brands with community characteristics.	2	2	2 points for compliance.
		57	Through the media to carry out multi-channel public opinion propaganda, and actively create an atmosphere of creation.	1	1	1 point for compliance.
Cultural construction (4 points)	Cultural construction (4 points)					

Table 1 Evaluation index scores of beautiful and livable areas in Jiangsu Province

5.Conclusion

The "stock" era is not a fleeting phase; it requires thorough preparation and active exploration of suitable planning and architectural theories and methods to address new challenges ^[19].The transformation of old urban neighborhoods should not only preserve the community's historical essence but also make its present and future more predictable. This design focuses on three main objectives for

the renewal and transformation of residential communities: "livelihood orientation, long-term operation, and solving practical problems." Our commitment is to realize the vision of a beautiful community with complete infrastructure, comprehensive living facilities, and well-established property service centers.

Author Contributions

Conceptualization,W.L.;methodology,X.Z.;investigation,X.Z.;softwareW.L.;writing—original draft preparation,W.L.;writing—review and editing,W.L.; visualization,X.Z.; supervision,X.Z.; project administration,W.L..All authors have read and agreed to the published version of the manuscript.

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Data availability

Data is available in the manuscript.

Competing interests

The authors declare that they have no competing interests.

Informed Consent Statement

In this study, we obtained verbal informed consent from all participants.All participants gave informed consent for their photos to be used, explicitly agreeing to their use in the promotion and presentation of this project.

Ethical statement

All methods in this study were carried out in accordance with relevant guidelines and regulations to ensure ethical and procedural integrity. The experimental protocols were approved by the Institutional Review Board of Taizhou Institute of Science and Technology, Nanjing University of Science and Technology (NJUST).Approval number:TIST-2023-001.

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