

# Space Transformation Strategy of Old Residential District

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## Abstract

**This template based on the perspective of micro transformation and aging, the transformation methods of the current old residential areas are studied. Based on the reading and analysis of relevant literature, the existing problems and difficulties of the old residential areas are analyzed, and the corresponding countermeasures and suggestions are put forward.**

## Keywords

**Micro transformation, suitable for aging, urban old residential area, countermeasures and suggestions.**

## 1. Background

The old residential area is generally located in the city center, with mature supporting facilities, sound educational resources, medical resources and commercial resources. Statistics from the Ministry of housing and urban rural development show that there are about 160000 housing reform, fund-raising housing and resettlement housing communities in China before 2000, with a total of 4 billion square meters, involving 42 million households, with a large number and a wide range. Moreover, the number of residents, age structure and cultural background of each community are different, and the infrastructure construction of each community is different.

Housing is an important part of the old urban community. Its development began in the 1980s. In the process of reform and opening up, China's land policy and housing policy have been continuously improved, the real estate industry has been booming, a large number of commercial housing has begun to appear, and the form of housing property rights has also shown diversified development. Especially in recent years, a large number of commercial houses and resettlement houses have been built, forming a large number of new residential areas with concentrated population density, beautiful environment and complete living facilities.

In the process of urban construction, the allocation of various resources is relatively lacking. In the process of distribution, the limited resources are more likely to be allocated in areas that are more in line with the needs of urban economic development and can effectively achieve economic growth. The old residential areas in the city are gradually marginalized by urban development due to the narrow expansion space and high ground price. The rapid construction of the new city and the slow renewal of the old community can not develop together, and the phenomenon of urban social differentiation is increasingly obvious. However, the problems such as poor quality of housing, old infrastructure, shabby living facilities, dirty environment, lack of property services and so on in the old urban residential areas have seriously affected our quality of life.

## 2. The Main Problems Existing

### 2.1. Building Structure

The structure of the old buildings is relatively stable, and the details need to be repaired. The main problems of building quality are as follows: first, the roof leakage is serious. Although it has been repaired spontaneously, the effect is not good. Some residents have built temporary buildings on the top floor to prevent water leakage on the roof, which directly results in the prevalence of illegal buildings on the roof. During the investigation, the building materials fell when the house faced the typhoon season, which brings serious safety risks to residents' production and life safety; second, the wall seepage Water phenomenon is prominent. The Secretary of Minfeng community of Yueqing pointed out that the seepage of the building wall directly led to the peeling off of the flour coating on the exterior wall, which also posed a certain threat to the stability of the overall structure of the building. Third, there are structural hidden dangers in the stairwell and exposed reinforcement in the stairwell. Although it has been maintained for many times, the phenomenon of falling off has not been completely improved.

### 2.2. Water, Electricity, Gas, Road and Other Infrastructure

Water, electricity, gas, road and other infrastructure can not be updated organically for a long time, seriously affecting the quality of life of residents. In the investigation, we learned that the old residential quarter built before 2000 has big shortcomings in the repair of water supply and drainage system, the improvement of strong and weak electricity system, the transformation of natural gas into the house, the improvement of road facilities quality, etc., which are mainly manifested as follows: first, the water supply and drainage and fire-fighting facilities are worn out, affecting normal use. Cast iron and galvanized materials are widely used in water supply pipes, which lead to inner wall blockage and outer wall corrosion due to long-term use, resulting in abnormal use of pipes, ineffective disposal of residual pipes for a long time, and high-altitude suspension affecting vision and safety.

Most of the drainage pipes and blowdown pipes are made of cast iron. Due to corrosion and oxidation, the pipes are blocked and the drainage and blowdown of the water pipes are not smooth. The project of intercepting and receiving sewage in the community is lagging behind, and the phenomenon of sewage flowing back to the toilets of low-rise residents often occurs. The damage of the fire water supply pipe can not be maintained in time, which increases the fire risk for the old community with weak fire prevention ability. Second, the construction of strong and weak electricity is lack of overall management, and the residual pipelines cannot be cleaned for a long time. With the general improvement of residents' living standards and the continuous improvement of power demand, the continuous promotion of relevant livelihood projects such as the expansion of strong power capacity and the transformation of the State Grid, the power consumption environment of the residents in the old residential area has been improved, but the residual strong power lines are more serious in the old residential area. The departments of China Mobile, China Unicom, China Telecom and Huashu lack scientific planning and organic coordination, and their construction is not good. For example, after ADSL is converted into optical fiber, the abandoned weak current lines have not been cleaned up, and the coexistence of new, old and weak wires is common in the corridor. In addition, the problem of outdoor high-altitude wiring of strong current and weak current has not been rectified. Various wires and cables are interwoven in the air, which not only has potential safety hazards, but also brings many adverse effects on the community environment. The third is the coordination of multiple competent departments involved in the entry of natural gas into households.

A visit to the old residential quarters shows that there have been more successful cases in the reconstruction of the old residential quarters, but many of the old residential quarters have not fully realized the natural gas reconstruction due to capital, municipal natural gas pipeline and other reasons. Fourth, due to the construction of multiple types of work, the road repair can not be stopped, and the pavement damage can not be repaired organically. For a long time, due to the lack of coordination between different functional departments or different construction units in various kinds of repairs organized by residents or the government, such as the five water co governance, strong electricity transformation and other projects, the quality of roads has been continuously reduced and the traffic safety has been seriously affected by their respective construction. Fourth, the lack of parking space leads to the poor fire fighting access. According to the investigation of the research group, there is a large gap in the parking space of the old residential area, and the residents Park and place their motor vehicles randomly, which leads to the blocking of motor vehicles and fire-fighting channels, resulting in the poor road traffic.

### **3. Suggestions for Reconstruction Strategy of Building Quality**

#### **3.1. Structure Improvement Strategy**

Combined with the regional location and planning requirements of the old residential area, it is necessary to renovate the facade of the building while repairing the components to ensure that the building structure is in good condition. The renovation of the facade of the building should be coordinated with the surrounding building environment. The suggestions for the facade renovation are as follows: first, the facade renovation should be carried out for the buildings with good foundation conditions and basically intact facade surface layer Only the stains caused by rain become moldy, the method of external wall cleaning shall be adopted; the second is to repair the buildings with partial surface layer damage by using raw materials or materials similar to the materials; the third is to repair the buildings that have been built in the early years and have fallen off in pieces, it is recommended to brush the waterproof layer of external wall and renovate with qualified materials such as cement mortar after all are removed.

##### **3.1.1. Roof Treatment**

The renovation of the old residential area needs to pay attention to the roof treatment. The roof of buildings in the residential area often appears water seepage, water leakage and other phenomena, which brings many problems to the residents. In the transformation, there are the following suggestions: first, on the basis of the original building structure, according to the current situation of the roof waterproof treatment at different levels, fundamentally solve the problem of leakage, ensure long-term normal use; second, the structural conditions are good, accessible building roof, combined with roof greening, layout of leisure facilities and other ways to transform the roof into a public space; third, actively explore the roof plus Install solar photovoltaic power generation system, improve the efficiency of energy conservation and emission reduction, and expand the financing channels for the transformation of old residential areas.

##### **3.1.2. Component Repair**

Building components refer to local components except the main body of building structure, such as canopy, eaves, railings, etc. In typhoon prone areas, relevant components are easily affected by wind, rain, etc., which may cause injury to outdoor pedestrians and have potential safety hazards. It is suggested to add necessary safety enclosure components, remove the components that have lost the use function, and repair the damaged components according to the new safety technical standards.

### 3.1.3. Rectification of Stairway

The corridor is the necessary place for residents to enter and exit the community. The corridor of the old community is generally seriously aging, which has a large potential safety hazard. The suggestions for corridor reconstruction are as follows: first, renovate the original functional but aging entrance of the building door, repair or replace the building door, realize the closure of the space in the building, improve the safety sense of the residents in the community, add the entrance canopy and other facilities according to the actual situation, and improve the identifiability; second, repair the footpath, handrail and wall in the corridor, and damage the footpath class in the corridor Based on the safety of the building structure, repair shall be carried out; the damaged handrails and railings shall be reconstructed, and continuous double-layer handrails shall be set when necessary for the use of the elderly; the damaged walls in the corridor shall be renovated.

### 3.1.4. Installation of Elevator

It is an important measure to install elevators in the old residential area to adapt to the aging transformation. Its purpose is to change the current situation that there is no elevator in the residential building and it is inconvenient to go up and down the building. Suggestions for installing elevators are as follows: first, actively introduce social resources, carry out "micro elevator" leasing mode, and provide owners with a variety of service types; second, scientifically select elevator types, such as steel structure sightseeing elevators with short construction period, convenient construction, clean and bright appearance in case of tight site and high environmental requirements; third, scientifically design and combine with the actual construction According to the situation and the needs of the residents, the way of elevator entering the house should be selected.

## 3.2. Transformation Strategy of Public Environment.

### 3.2.1. Neighborhood Spacepublic Activity Space

It carries the daily communication and communication of residents in the community, and it is the key to shaping the neighborhood atmosphere. The public space form of the old community is relatively simple, and the public site is missing. The scattered or hidden scattered building space which has not been used well for a long time in the community structure is transformed into pocket park, which can be used as a small-scale open space. Pocket park is flexible in site selection, small in construction scope, and easy to complete. It is more suitable for reconstruction and construction in old and tense communities. Its discrete distribution features can greatly enrich the functions of communities and expand the neighborhood activity space of old communities.

### 3.2.2. Featured Space

The neighborhood relationship of the old community is relatively stable, and the characteristic activity space can be block public activity space or linear public space. The first is to decorate the common facade or add space such as interesting pieces of green plants and sculptures in the middle of the road; the second is to design and implement according to different status quo and in combination with the requirements of building characteristic space; the third is to arrange relevant supporting facilities in combination with the needs of residents' social interaction, activities of the elderly, children's play, walking and other leisure functions; the fourth is to build a rich cultural space, For the elderly exercise, children's games, young people's skateboarding and other venues, as the characteristic space of the whole community.

### **3.3. Ransformation Strategy of Transportation System**

#### **3.3.1. Road System**

With the continuous renewal of means of transportation and the continuous change of urban spatial pattern, the status of transportation system has become more and more important. The old traffic hardware is the common fault of the old community. The task of road system improvement in the old community is to solve the problem of road congestion in the community, to make the internal roads of the community smooth and coherent, and to ensure the convenience and safety of community residents' travel. The reconstruction suggestions are as follows: first, renovate and repair the existing damaged roads. For the roads with surface cracking, base and good quality, the local surface layer shall be removed, and the raw materials shall be used for re laying. For seriously damaged roads, design and construction shall be carried out according to the load requirements of road properties; secondly, the road system of the community shall be re combed, the dead end road of the community shall be opened, and the road between the houses shall be arranged. According to different levels of the road, different pavement materials shall be selected or signs, stop stones and car stops shall be set at the intersection to facilitate residents' differentiation and improve the comfort of the community; thirdly, conditions shall be provided Through the distinction of paving material and color, the old residential area of the city divides sidewalk and carriageway to realize the separation of people and vehicles and improve the traffic safety.

#### **3.3.2. Parking System**

By solving the parking problem, can we avoid the public roads and spaces being occupied by parking, liberate more public space resources in the community, and create a good public environment. The transformation suggestions are as follows: first, combine the original low-quality green space with the road system renewal, and appropriately arrange a certain number of roadside parking spaces. There should be a proper amount of green space between the roadside parking and the building to cut off the line of sight interference with the residents and reduce the negative impact on the environment; secondly, on the premise that the size of the vertical space meets the construction standard, according to the actual situation of the community, it is planned to set up three-dimensional parking facilities to achieve the increase of parking space.

### **3.4. Reconstruction of Water, Electricity and Gas**

#### **3.4.1. Indoor Infrastructure**

In terms of electricity use, on the basis of ensuring one household one metering meter, configure the protective grounding wire for electricity use, sort out the phenomenon of disorderly pulling and hanging of power lines, telephone lines, cable TV lines and other three lines, remove the scrapped lines, and other kinds of pipelines can be put into the box, and set labels for binding management. On the basis of beautification, effectively eliminate the hidden danger of electricity use safety.

In terms of water , on the basis of ensuring one household one metering water meter, the rainwater and sewage can be separated from each other. At the same time of the roof renovation project, the rainwater pipes can be supplemented in time to ensure the normal drainage of rainwater on the building roof. By carefully checking the pipe network facilities in the community, timely repair and replace the aged and unusable water pipes and rainwater pipes.

In terms of gas, the old residential quarters without pipeline gas installation are required to install pipeline gas. According to the specific conditions of each old residential quarter, scientific installation methods such as erection, burying and casing are selected; for the old



residential quarters with gas pipeline installed, the risk of damage and air leakage is detected to ensure the gas safety of residents in the residential quarters.

### 3.4.2. Outdoor Infrastructure

In terms of fire protection, fire-fighting facilities and sanitation treatment facilities are an important part of outdoor infrastructure construction. Due to the long service life of the old community, the aging phenomenon of equipment is increasingly prominent.

In the renovation of fire-fighting facilities in the old residential area, first of all, we need to strengthen the investigation, timely improve the fire-fighting facilities, clear the obstacles affecting the normal use of outdoor fire-fighting equipment and facilities, and update fire extinguishers, hydrants and other fire-fighting equipment. In strict accordance with the requirements of the technical specifications for fire protection construction, the number of fire-fighting facilities and the layout of fire-fighting equipment in the old community shall be implemented, and the indoor and outdoor fire-fighting equipment shall be supplemented in time to meet the basic fire-fighting requirements.

Another main content of the renovation of the outdoor infrastructure in the old residential area is to improve the equipment and facilities for garbage disposal. In the process of transformation, it is necessary to build and transform the waste treatment infrastructure as a whole.

It is suggested that on the basis of realizing the waste collection point, closed isolation facilities should be set up, and the ground of the collection point should be hardened, so as to facilitate the timely removal and transportation of waste and the cleaning of the waste station, actively isolate the sight and smell, and create a beautiful living environment. The community with conditions encourages the introduction of intelligent waste classification system and the utilization of large number of waste According to the "Internet plus" technology, the garbage classification facilities are further utilized to realize the scientific classification of garbage on the basis of the existing garbage classification management.

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