

Le Maintenance, Preservation and Conservation of Modern and Contemporary Historical Buildings in Shanghai and the Strategic Research

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Abstract

The preservation and maintenance of modern and contemporary historical buildings in Shanghai covers the work of the daily use, the archives management, the inspection and appraisal, the design and the repair and construction, etc. A set of systematic protection management system and repair technology system have been basically established. With the progress of economy and the enhancement of people's awareness of protecting urban architectural heritage, the preservation scope of historical buildings in Shanghai will continue to expand. Thus further research on the preservation and maintenance could be an important support for the renovation and sustainable utilization of historical buildings. This paper firstly summarizes the general situation of preservation for the historical buildings in Shanghai, and then analyzes the achievements and existing problems. At last, several suggestions for improving the protection and utilization are put forward including establishing a clear reservation protection standard, encouraging pluralistic and activate utilization, promoting public participation, as well as uploading the Artisan spirit and inheriting the traditional craft, etc.

Keywords

Modern and Contemporary Historical Buildings; Inheriting the Traditional Craft; Preservation and Maintenance of Historic Buildings.

1. Background and Significance of Maintenance, Preservation and Conservation Research of Modern and Contemporary Historical Buildings in Shanghai

Since the year of 2017, the guidelines for urban renewal and historical building protection have shifted from 'remove, renovate, reserve altogether, and remove first' to 'reserve, renovate, remove altogether, reserve first'. The maintenance and preservation of historical buildings not only applies to exquisite buildings with outstanding historic, artistic, scientific, social and cultural values, but also oodles of widely spread-out historical buildings which embody the historic and cultural context and ups and downs of the city, to further uplift Shanghai to a city with 'readable buildings, adorable feelings. The maintenance and preservation of historical buildings will necessitate the prior work of document collection, building mapping and surveying, meanwhile, the research of the structural features, protection and conservation technologies, and the institution of standards thereof, to pass on the style unique to the historical buildings through conservation and make the time-honoured old buildings stay what they are.

At present, the preservation, maintenance and repair of modern and contemporary historical buildings in Shanghai covers the work of the daily use, the archives management, the inspection and appraisal, the repair and the design, the repair and construction and regular survey, etc., a systematic management and maintenance technology mechanism has been established. With the economic and social progress and people's rising consciousness for the protection of urban building heritage, Shanghai city renewal and the application of the guideline 'reserve, renovate and remove', which will continually broaden the preservation and protection zone of the historical buildings in Shanghai, therefore the further research into the maintenance, preservation and repair technologies thereof will substantially bolster the protection, repair, and sustainable use of historical buildings. In view of the above-mentioned context and needs, considering the practical work over the recent years, this paper sifts through the preservation, maintenance and repair and summarizes the achievements gained and problems in place, proposes strategies and suggestions to better preserve and maintain the historical buildings in Shanghai and implement more flexible use thereof, which altogether will cast great significance over the improvement of the preservation and maintenance technologies of historical buildings, promote flexible use of modern and contemporary historical buildings, the protection of the historic, artistic, scientific, social and cultural values of historical buildings.

2. Preservation and Repair of Modern and Contemporary Historical Buildings in Shanghai

2.1 Relevant Laws, Regulations, Technological Standards and Norms

Shanghai has taken the lead in the research and practice of preserving and maintaining historical buildings all around China. Early in 1991, Shanghai Excellent Modern Building Preservation and Management Regulations was issued, which initiated the establishment of the preservation and management system for the modern and contemporary buildings. In 2003, Shanghai Historical and Cultural Zone and Excellent Historical Buildings Protection Ordinances was issued, which is the first regional ordinances specific for the protection of excellent historical building heritage in China, marks the upgrade of protection level from local government regulations to regional ordinances, and regulate the management practices on modern and contemporary historical buildings like preservation, use, repair and maintenance [1].

In the aspect of technical standards and norms, the standard system in place in China introduces the repair and maintenance of modern and contemporary buildings into the standard system for 'existing building maintenance and reinforcement', which will focus more on the safety restructuring and maintenance technology, and has not paid enough attention to the restoration requirements of historical buildings, the combination of modern repair technologies and traditional repair skills, the adaptive changes of firefighting, energy conservation, sunshine, sound insulation, insulation for the renewal and repair of historical buildings, to sum it up, the techniques implemented to modern and contemporary buildings are not noticeably distinguished from those applied to common civilian buildings.

Based on the characteristics of the local modern and contemporary historical buildings in Shanghai and the repair technique practice thereof, Shanghai took the lead throughout China to carry out Excellent Historical Buildings Repair Technique Regulations in the year of 2004, and revised the Regulations in 2014, and went even further to tap into Shanghai Historical and Cultural Zone and Excellent Historical Buildings Protection Ordinances, Shanghai Excellent Historical Buildings Protection and Repair Design Compilation Guidelines, Shanghai Excellent Historical Buildings Protection and Repair Project Completion Declaration Guidelines, Houses Repair Engineering Technical Regulations, Shanghai Excellent Historical Buildings Testing and Evaluation Guidelines (Trial), etc., which altogether effectively has regulated the repair work of excellent historical buildings in Shanghai, has protected history, art, science, social and cultural value of historical buildings, and pushed forward the protection and use of historical buildings.

2.2 Shanghai Modern and Contemporary Historical Buildings Retaining and Reservation Status

From the aspect of historical buildings retaining and reservation, Shanghai modern and contemporary historical buildings can mainly be classified into four categories: category one, all-level immovable cultural heritage listed according to the specifications in National Cultural Heritage Laws, right now Shanghai has 3437 immovable cultural heritage units, of which 30 are National Key Cultural Heritage Protection units, 239 are Municipal Cultural Heritage Protection units, 423 are district cultural heritage protection units, 2745 are cultural heritage protection sites (registered immovable cultural heritage); category two, excellent historical buildings established according to Shanghai Historical and Cultural Style Zone and Excellent Historical Building Protection Ordinance, till now a total of 1058 excellent historical buildings have been incorporated into protection at five different times, for details please refer to Diagram 1; Category 3, the preserved historical buildings defined by Shanghai Historical and Cultural Zone Protection Ordinances, based on preliminary statistics there are 4100 preserved historical buildings in the central town area of Shanghai, covering a total of 960900 hectares, construction area 2739000 square meters, overall Shanghai has 5451 preserved historical buildings, covering 1245000 hectares, construction area 3170900 square meters; category 4, general historical buildings with some certain value.

Table 1. Distribution of Excellent Historical Buildings in Districts

| District Name | Cohort 1 (sites) | Cohort 2 (sites) | Cohort 3 (sites) | Cohort 4 (sites) | Cohort 5 (sites) | Subtotal (sites) |
|---|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Huangpu District (Including former Southern Town Area, Luwan District) | 34 | 72 | 41 | 62 | 83 | 292 |
| Jing'an District (Including former Zhabei District) | 5 | 26 | 27 | 32 | 67 | 157 |
| Xuhui District | 7 | 48 | 35 | 48 | 115 | 253 |
| Changning District | 7 | 11 | 31 | 47 | 25 | 121 |
| Hongkou District | 4 | 12 | 11 | 31 | 40 | 98 |
| Yangpu District | 3 | 4 | 7 | 12 | 19 | 45 |
| Songjiang District | 1 | 0 | 0 | 0 | 3 | 4 |
| Putuo District | 0 | 2 | 5 | 2 | 3 | 12 |
| Pudong New District | 0 | 0 | 2 | 0 | 47 | 49 |
| Minhang District | 0 | 0 | 1 | 0 | 0 | 1 |
| Baoshan District | 0 | 0 | 1 | 0 | 1 | 2 |
| Jiading District | 0 | 0 | 0 | 0 | 4 | 4 |
| Qingpu District | 0 | 0 | 0 | 0 | 13 | 13 |
| Jinshan District | 0 | 0 | 0 | 0 | 3 | 3 |
| Fengxian District | 0 | 0 | 0 | 0 | 2 | 2 |
| Chongming District | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 61 | 175 | 162 | 234 | 426 | 1058 |

From the perspective of construction structure and construction materials, modern and contemporary historical buildings in Shanghai are mainly composed of reinforced concrete structure, brick and timber structure, brick-concrete structure, and other structures like brick and stone structure, steel

structure, mixed structure, wood structure, etc.; from the perspective of construction functions, modern and contemporary historical buildings in Shanghai can be classified into six categories, official buildings, commercial buildings, leisure buildings, public buildings, residential buildings, industrial buildings; from the perspective of construction style, Gothic, Renaissance, Baroque, Neo-classicism and some other western classic architecture style, Spanish, Islamic and Russian style buildings, early modern style and East-west combined style [2].

2.3 Characteristics of Shanghai Modern and Contemporary Historical Buildings Protection and Preservation

Shanghai plays a special role in modern Chinese culture, whereas construction is a mirror of a society, Shanghai's modern and contemporary buildings reflects its distinct features. Quoting academician Mr. Zheng Shiling "Foreign architects and Chinese architects studied overseas all have endeavored to build Shanghai following western city format and architecture style, have tried to introduce European and North American living style to replace traditional living style, and assimilate Western culture into Chinese culture. Therefore, the emergence of new architecture type and the application of new construction materials and new techniques has been casting significant influence on the modern construction in Shanghai." [3] Modern and contemporary buildings in Shanghai grow out of the convergence and collision of oriental and western architecture cultures.

Modern and contemporary buildings in Shanghai has been through four phases of exploration, transplanting period(1843-1900), transforming period (1900-1925), growing period (1925-1937), stagnating(1937-1949), representative construction styles from all historic periods can be found in modern and contemporary buildings in Shanghai, including western classicism, Baroque, Renaissance, Ancient Greek and Ancient Roman Column, Gothic, Neo-classicism, Decorative art, British style, Spanish style, Mediterranean style, American style, French style, Japanese style, German style, etc., and also Chinese traditional construction renaissance and Chinese Neo-classicism, which are so inclusive, extensive and splendid.

At present preservation of historical buildings in Shanghai adhere to the essential spirit of Chinese and overseas historical buildings preservation and conservation regulations such as Venice Charter, Chinese Cultural Relics Conservation Standards, following the fundamental principles of being true, complete, identifiable and reversible, and moves forward to preserve, conserve, innovate and use historical buildings, and regulate and streamline the conservation practices of historical buildings through the establishing of Shanghai Historical and Cultural Zone and Excellent Historical Buildings Protection Ordinances, and Excellent Historical Buildings Conservation Technical Regulations. The conservation of modern and contemporary historical buildings in Shanghai involves: (1) site survey, test and identification, including the scale, content, technical requirements for site survey, test and identification, particular test and identification requirements for energy efficiency, termite, material quality, exterior wall material type and engineering techniques; (2) conservation design, including building conservation design, structure conservation and reinforcement design, equipment conservation and renewal design, firefighting design, energy efficiency design, environmental protection design, etc.; (3) conservation engineering, including particular conservation engineering technical requirements for building conservation engineering, structure conservation engineering, equipment conservation and renewal engineering and brickwork exterior wall cleaning, brick and stone reinforcement, brick powder color matching, hydrophobic treatment, etc.; (4) completion acceptance, including historical building conservation engineering completion acceptance report, conformity acceptance of protection requirements, acceptance requirements for archived documents. Overall, the management of historical building conservation in Shanghai is strict, conservation process clear and explicit, partially addresses the issues like the style and feature preservation, test and identification, construction safety, function upgrade, equipment renewal of historical buildings. Meanwhile, targeted regulations and standards has been greatly streamlining the conservation practices of historical buildings, so as to effectively keep the value of modern and contemporary historical buildings. Nevertheless, with the application of the "Reserve, Renovate, Remove" policy

and the expansion of reservation and preservation scale of modern and contemporary historical buildings in Shanghai, relevant rules, policies, standards and regulations need to be further reviewed and refined, to address the newly emerged challenges of reservation and preservation of historical buildings in new historic times, to meet the new demands of the next round of reservation, preservation and conservation of historical buildings in Shanghai.

3. Status Quo and Existing Problems of the Reservation, Preservation and Conservation of Modern and Contemporary Historical Buildings in Shanghai

3.1 Expanded Reservation and Preservation Scale, Implicit Standards

As presented earlier, at present Shanghai has identified and accredited 3435 sites of cultural relic buildings with legal identities at distinguishable levels, 1058 sites of Excellent historical buildings, and has technically established the integrated preservation system of city historical, cultural style and excellent historical building preservation echoing the format of “site, street, scale”. Outside the preservation system, there exists a quantity of historical buildings with reservation and preservation value. With the application of the policy of “reserve, renovate, remove”, reservation and preservation not only focus on the exquisite historical buildings with outstanding value, but also expands the reservation and preservation to building heritage like common civic residential buildings such as alley apartments which embodies the past city daily life. Echoing the advanced global concept, oodles of historical buildings of more than 50 years old have been primarily reserved. However, as to these reserved historical buildings, at present we have just evaluated the primary value of style streets at the planning level, and categorized which into three levels that are stretched preservation, sectioned preservation and scattered preservation, while as for the single building heritage value, use value, environment value, construction structure completeness and resident willingness of these reserved buildings there is no defined comprehensive value evaluation thereof and the specific reservation and preservation standards have not been established yet.

3.2 Lack of Feasibility of the Policies for Flexible Use of Modern and Contemporary Historical Buildings

One of the most distinct features of modern and contemporary historical buildings from ancient buildings is that the majority of modern and contemporary buildings are still in actual use. To encourage the flexible use of modern and contemporary historical buildings will inevitably change the use nature of some historical buildings due to the shift of its function, though Shanghai Historical and Cultural Zone and Excellent Historical Buildings Protection Ordinances has specified items for the flexible use and function shift of historical buildings, due to the void of implementation principles there is no practical and specific measures to change the use nature of modern and contemporary historical buildings and there is a lack of feasibility of relevant policies for the flexible use of modern and contemporary historical buildings.

3.3 Technical Weakness of Traditional Conservation Techniques

The special historic context where Shanghai modern and contemporary historical buildings were constructed decides the east-west combined construction techniques and building style thereof. Thus, the structure of lots of modern and contemporary buildings looks like a convergence of western construction techniques, materials and the ingenuity of traditional Chinese craftsman and building economic elements bestowed by the particular times, because of which the construction structure, construction materials, traditional conservation techniques are very complicated, region-specific and exclusive, and ask for high demand of conservation techniques. While the craftsmen with exquisite traditional conservation skills mostly are aged, and there is no ready craftsmanship inheritance system in place, plus generally the industry has not planned for conservation skill cultivation system, all resulting in the shortage of the talents for modern and contemporary historical building conservation.

3.4 Weak Legal Penalty for Violation of Laws, Regulations and Contracts

Inappropriate Practices like the damage to reserved and preserved buildings and renovation and decoration not adhering to regulations are handled in accordance with relevant regulations for cultural heritage protection and historical building reservation and preservation. Nevertheless, the still low penalty fine, weak punishment and partial coverage for violation of laws, regulations and contracts cannot frustrate the practices of damaging the historical buildings.

4. Maintenance, Preservation and Conservation Strategies for Shanghai Modern and Contemporary Historical Buildings

4.1 Specify Standards for Maintenance, Preservation and Conservation, Promote the Compilation of Technical Regulations for Maintenance and Preservation

Starting from the basis of primary value identification of reserved and preserved buildings, historical, artistic, scientific, social and cultural values of reserved and preserved buildings further analysed, overall cityscape environment value, use value, building and structure completeness and resident willingness combined, comprehensive value evaluation system of reserved and preserved buildings is established; it is necessary to specify elements, scope and levels of reservation and preservation, and to promote the compilation of reservation and preservation technical standards and regulations.

4.2 Encourage Multiple-mode Flexible Use of Historical Buildings

“If historical buildings have future, then, basically, the future lies in the shift and transformation of historical buildings themselves to meet new demands”. Particularly speaking of modern and contemporary historical buildings in Shanghai, the majority of which are still in actual use, thus it is suggested that on condition of reservation and preservation multiple modes of flexible use be explored, ways for social capital and public participation in the flexible use of historical buildings be researched into, the government support the flexible use of historical buildings through policy guidance, financial aid, etc., ultimately to activate the vigor of historical buildings and improve the historic and cultural charm of the city.

4.3 Expanding Multi-channel Financing, Increasing Reservation and Preservation Financial Investment

Modern and contemporary historical buildings in Shanghai were built long ago, the construction standards of which back then were quite different, the history-resulted density and overuse thereof has caused certain damage to the historical buildings, all demanding large financial investment in the reservation, preservation, conservation of buildings, in the improvement of residing environment of residents, etc. Therefore, it is recommended to establish a dedicated municipal fund for reservation and preservation of historical buildings, to make full use of national dedicated fund for the preservation of famous historical and cultural cities, to arouse the enthusiasm of developers, to do financing through multi-channel for the purpose of maintenance, management and flexible use of reserved and preserved historical buildings in Shanghai.

4.4 Solid Promotion of Public Participation, Reservation and Preservation of Buildings for the Benefit of People

A great number of modern and contemporary historical buildings in Shanghai are for residential uses, and which were build decades ago, the construction quality of which were not all good, maintenance of which are poor, use of which is improper, resulting in situations like commonly seen unsatisfactory residential environment, shortage of set up of kitchen and washroom, poor physical environment of natural lighting, ventilation, sunshine and sound insulation, generally the residential quality of residents need to be increased. To improve the residential conditions of the residents on the basis of reservation and preservation so as to benefit the people is a way of combining historical landscape protection and people well-being improvement. Meanwhile, it is advisable to make more historical buildings accessible to the public, to raise and cultivate social awareness of historical landscape and

historical building reservation and preservation so that the public can actually participate in the identification, maintenance and use of historical reserved and preserved buildings through various channels, and can participate in the management work of the reservation and preservation of historical buildings.

4.5 Establish Traditional Craftsmanship Inheritance System, Upgrade Technical Talents Level

Considering the fact that the configuration of modern and contemporary historical buildings in Shanghai is complex, region-specific, traditional craftsmanship is applied in the process of maintenance of reserved and preserved buildings for the purpose of retaining the antiquity as it was, and traditional construction techniques applied for fair-faced concrete brick wall conservation in exterior facade conservation, tile roof conservation, exterior facade plastering, brick masonry moisture proofing course conservation are distinct from modern techniques, which require that the conservation technicians are rich in expertise knowledge of traditional conservation techniques applied to modern and contemporary buildings. However, neither traditional craftsmanship inheritance system nor industrial skill training system has been established. Veteran technicians proficient in conservation techniques are numbered, and it is probable that no many people are eligible to pass on the traditional craftsmanship. It is suggested to carry out categorized and special research into the traditional conservation craftsmanship and formulate targeted systematic industrial or regional standards and regulations. Traditional craftsmanship inheritance system shall be simultaneously established, traditional craftsmanship protection policies and measures be set up, technical talents proficiency level shall be upgraded to carry forward craftsman spirit and inherit traditional craftsmanship.

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