

RESEARCH ON THE CURRENT STATUS AND PROTECTION OF THE WORKS OF LÁSZLÓ HUDEC ON THE BUND IN SHANGHAI: USE I.S.S NORMANDIE APARTMENT AS AN EXAMPLE

DOI: https://doi.org/10.18485/arh_pt.2025.10.ch76

_ Hanxiao Li

DLA student, Marcel Breuer Doctoral School, Faculty of Engineering and Information Technology, University of Pécs, Hungary, lihanxiao@mail.com, [0009-0006-9662-7423]

_ Miklós Halada

PhD, Associate Professor, Faculty of Engineering and Information Technology Institution, University of Pécs, Pécs, Hungary, halada.miklos@mik.pte.hu, [0000-0002-2476-4721]

_ Bálint Baranyai

PhD, Assistant Professor, Faculty of Engineering and Information Technology Institution, University of Pécs, Pécs, Hungary, baranyai.balint@mik.pte.hu, [0000-0002-9523-535X]

_ Yizhou Tang

PhD student, Faculty of Engineering and Information Technology Institution, University of Pécs, Pécs, Hungary, tang.yizhou@edu.pte.hu, [0009-0008-9732-1025]

ABSTRACT

Representative examples of architecture by Hungarian architect in China are mainly reflected in the classic works of Hungarian architect László Hudec in the first half of the 20th century. Hudec left more than 60 buildings in Shanghai between 1918 and 1947, one third of which are listed in the Shanghai Excellent Historical Building Protection List, becoming an important part of Shanghai's modern architectural style.

The Bund building protection is a core issue in the protection of Shanghai's urban cultural heritage. Its systematic practice reflects the deep integration of historical style and modern urban renewal. This paper takes the restoration project of Hudec's renowned residential apartment, the Normandie Apartment, as a case study to conduct an academic analysis of the restoration methods for early 20th-century historic buildings and the policies implemented by the Shanghai municipal government for historical architectural conservation.

KEYWORDS _ *László Hudec, Restoration project, Heritage building in Shanghai, Veranda-style apartment*

INTRODUCTION

The Bund is the symbol of Shanghai. It was the first piece of land that the colonialists set foot on in Shanghai and the starting point of Shanghai's urban modernization. The Bund (Zhongshan East 1st Road) was formerly known as Huangpu Beach and Huangpu Road. It is 1,168 meters long, starting from Yan'an East Road in the south and ending at Waibaidu Bridge in the north. On the west side of the road, tall buildings are lined up in a staggered manner. There are a total of 23 houses preserved in the Bund's characteristic building complex. [2]

László Hudec (Hugyeczi László Ede or Ladislaus Edward Hudec) (1893–1958) – was a Hungarian architect who fled the vicissitudes of Europe in the early 20th century, taking with him the style and knowledge of European building design and construction. He was described as a legend. As one of foreign architects who fled his native Austro-Hungary Monarchy during troubled times, he ended up stamping his class on more than 50 projects, including more than 100 buildings during 1918 to 1947. His signature work, the Park Hotel, was completed in 1934, it was the tallest building in the Far East and one of the tallest reinforced concrete structures in the world at the time. Today, it remains one of the historical buildings under key protection by the Shanghai municipal government.

His works have been varied- from offices, hotels, hospitals, churches, cinemas, schools, factories, apartments to private residences that were a kaleidoscope of styles including classicism, eclecticism, expressionism, Art Deco, modernism, regionalism, etc. The buildings are located all around the city, from the bund area to western suburbs and even in northern Shanghai's Wu Song Kou, the confluence of the Huangpu and Yangtze Rivers. The sheer quantity, quality and variety of Hudec's works were a rarity even by world standards, especially in the history of architecture. [1]

Case study -Use the Normandie Apartment Renovation Project as an Example.

BASIC INFORMATION OF THE NORMANDIE APARTMENT

I.S.S Apartments on Avenue Joffre (also called Normandie Apartments or the East Metro Apartments on today's Huaihai Road) was a signature Hudec work during his time with the R.A. Curry firm. Normandie Apartments stands at a striking position. The triangle lot is located at the crossroads of five streets and provides an open view. The steep, sharp-headed building symbolizes a powerful warship. This is very different from the design concept of traditional Chinese architecture, which advocates a round sky and a square earth, a neutral position, central axis symmetry, and sequential orientation. The eight-story building was the earliest veranda-style apartments in Shanghai. It is designed in a French Renaissance style. The classic elevation is divided in three sections horizontally.

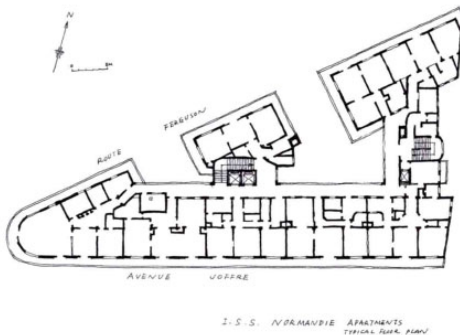


Figure1: Floor plan from Shanghai Construction Archives Museum [1] **Figure 2:** Photo by Xi Wenlei [1]

The external walls on the ground and second floors are coated with artificial stones while the floors above boast red bricks. Ashlar surfaced top floor correspondent with the base. The cantilevering balconies and the parapets juxtapose to become eave with double parallel corners. The three sections of continuous balconies form the vivid waist line on the facade. Other noteworthy architectural details include the carved stones in every segmental arch of the ground floor, the vase-shaped stone balusters on the balconies and the classical pediments on the window lintels. [1] The renovation project starts from the beginning of 2019 and cost four months.

CONDITION BEFORE THE RENOVATION WORK

Before the renovation work, the Normandie Apartment was facing many structural, and inner door function problems, which can be summarized into the following three aspects:

A. Structural Degradation and Material Deterioration of the Building

Deterioration of the Facade: The concrete structural components exhibit cracking and spalling, while the corrosion rate of the lower sections of the balcony iron railings has approached 50%. The embedded steel plates between steel-framed windows and brick walls have undergone rust-induced expansion, increasing the risk of water infiltration. Furthermore, prolonged environmental exposure has led to the weathering and strength degradation of the fair-faced brick walls. The restoration of these brick structures necessitates a balance between preserving historical authenticity and enhancing load-bearing capacity.

Functional Component Failure: The original elevator system has undergone significant aging, with the gated elevator doors failing to comply with contemporary safety regulations. It is necessary to control the impact of vibrations caused by elevator operation on brick-wood structures. Furthermore, external appendages such as canopies and drying racks exhibit spatial disorder, thereby compromising the architectural integrity of the building's original design.

B. Obsolescence of Infrastructure and Residential Environment

Aging Utility Systems: The concealed infrastructure, including water supply and drainage pipelines as well as electrical wiring, has deteriorated over time, posing risks such as water leakage and electrical hazards. Moreover, the lack of systematic maintenance in public areas has resulted in severe damage to shared interior facilities.

Insufficient Residential Comfort: The disorderly installation of external air conditioning units has introduced safety hazards in the courtyard area. Additionally, the existing residential spaces are misaligned with contemporary housing standards, leading to a disparity between current living conditions and modern habitation requirements.

C. Lack of Coordination in the Surrounding Urban Aesthetic

Disorder in the Urban Interface: The dense network of overhead cables along Huaihai Middle Road creates a "visual web," conflicting with the aesthetic integrity of the historic architecture. Additionally, the pedestrian walkway, originally less than 2 meters in width, poses traffic safety risks, particularly during periods of high visitor congestion.

Disruption of Architectural Harmony: The addition of modern elements, such as non-uniform security grilles and commercial signage, compromises the rhythmic coherence of the original Neoclassical facade, detracting from the building's intended aesthetic composition.[6]

PROTECTIVE RESTORATION OF NORMANDIE APARTMENT IN 2019

In 2019, Normandie Apartment underwent a comprehensive protective restoration, marking

Shanghai's first pilot project integrating historic building conservation, old residential renovation, and the mitigation of falling object hazards. The project also introduced an information-based monitoring system for building safety management, aligning with efforts to enhance urban management precision.

The restoration of the building's exterior prioritized the reorganization of utility lines while also addressing roof repairs, concrete windowsills, fair-faced brick walls, washed stone surfaces, wrought iron balcony railings, and external drainage pipes. Interior renovations focused on the repair and installation of flooring, walls, ceilings, staircases, and wooden doors and windows. Additionally, environmental concerns were addressed through the systematic rectification of air-conditioning units, canopies, and clothes-drying racks.

Guided by the principles of preserving architectural integrity and improving residential living conditions, the restoration of Normandie Apartment successfully reinstated its historical appearance while enhancing the overall urban streetscape. This project made significant contributions to both cultural heritage preservation and urban aesthetic improvement.[5]

A. Restoration of the Fair-Faced Brick Walls

The exterior fair-faced brick walls were cleaned using a low-pressure water jet. For areas with surface weathering less than 2mm in depth, no restoration was performed to preserve the historical patina of the building. For weathering within a depth of 20mm, the deteriorated surface layer was first removed, followed by the application of a specialized strengthening agent. Individual bricks were then repaired using red brick powder to ensure structural integrity and visual consistency.

For mortar joint restoration, damaged joints were carefully removed and moistened with water. Repointing was conducted using an 8mm flush joint technique with lime-based mortar to maintain the original aesthetic. Upon completion of the wall repairs, a specialized water-repellent coating was uniformly applied to the surface, followed by a "color blending" treatment to achieve visual coherence with the surrounding structure.

B. Restoration of Washed Stone Walls

Construction Process: Cleaning of the washed stone surface >> Inspection of exterior washed stone conditions >> Repair of damaged areas >> Color blending treatment >> Application of water-repellent coating. For surface contamination on the washed stone facade, a low-pressure water jet cleaning method was employed. The surface was then inspected for hollowing and cracking, with specialized repairs carried out based on the actual extent of damage, including full removal and reconstruction in severely deteriorated areas or localized crack repairs where applicable.

When filling the gaps, areas with missing washed stone sections were repaired using new washed stone material that closely matched the original gray mortar layer in both color and texture. For large-scale repairs, a multi-layered restoration technique was implemented. The first layer consisted of a 12mm cement-sand mortar base at a 1:3 ratio, manually applied. The second layer involved a 1mm-thick application of cement mortar using a trowel. The third layer was a coating made from a mixture of cement and mineral granules that closely matched the size and color of the original surface particles. Upon completion, a water-repellent agent was applied to enhance durability and weather resistance.

The structural integrity of the balcony floor slabs was thoroughly inspected. For concrete slabs exhibiting rebar exposure due to rust-induced expansion, appropriate crack repair methods were applied based on the width and depth of the cracks. These included surface treatment, grouting, and filling techniques to ensure structural stability and durability. The restoration of washed stone balustrades and handrails on the balconies followed the same repair process as the washed stone walls, ensuring material consistency and aesthetic coherence.

C. Restoration of Windowsills and Balconies

Structural Assessment and Crack Remediation. A systematic structural evaluation of the balcony floor slabs was conducted to assess their load-bearing capacity and identify deterioration. In cases where reinforcement bars exhibited expansion-induced exposure, appropriate crack remediation strategies were implemented based on the specific width and depth of the fissures. Restoration techniques included surface treatment for minor cracks, grouting for medium-depth fractures, and filling methods for more extensive structural damage, ensuring both material integrity and long-term stability.

Preservation and Rehabilitation of Washed Stone Balustrades and Handrails. The restoration of washed stone balustrades and handrails adhered to the same methodological framework as the rehabilitation of washed stone wall surfaces. This approach ensured the preservation of historical materiality, visual coherence, and structural resilience, while maintaining alignment with conservation principles for heritage architecture.

D. Restoration of Steel Windows

For exterior steel windows with missing or broken components, damaged sections were removed and professionally remanufactured to match the original design before replacement. Minor damages, such as putty deterioration, were repaired accordingly. Window sashes and frames that had undergone deformation were straightened and realigned to restore their original shape.

The restoration process involved stripping the steel windows to their bare metal, removing old paint layers, and applying two coats of anti-rust primer, followed by a single coat of gray finish paint. Additionally, all necessary hardware components and clear glass panels were replaced to ensure functionality and visual consistency.

E. Regulation and Maintenance of Exterior Attachments

Due to the close proximity of Normandie Apartment to busy roads with high pedestrian and vehicular traffic, aging air-conditioning units and exterior wall components pose a significant risk of falling. Given that the building primarily serves as a residential space, the restoration process required a careful balance between enhancing livability and preserving the historic architectural character.

To address this challenge, the renovation plan adopted a context-specific design principle of “subtraction on the exterior, addition on the interior.” Air-conditioning units that disrupted the architectural aesthetic or posed safety hazards were relocated and reorganized, while unauthorized canopies and drying racks installed by residents were removed. Specifically, all air-conditioning brackets on the corbels of the second floor were relocated to the inner courtyard, and the positions of air-conditioning units on floors above the second were standardized to achieve a neat, aligned arrangement.

For floors three through seven, air-conditioning units were replaced with lighter, more durable materials and integrated into a “unified louvered structure” to ensure both ventilation and structural stability. To maintain visual harmony, the units were painted in a color matching the facade, effectively blending them into the exterior to minimize their impact on the building’s original aesthetic.

SHANGHAI’S INITIATIVES FOR THE SUSTAINABLE DEVELOPMENT OF BUND ARCHITECTURAL CONSERVATION

Shanghai’s Initiatives for the Sustainable Development of Bund Architectural Conservation

As a globally renowned historical and cultural district, the Shanghai Bund is home to a collection of architectural landmarks that not only embody rich historical and cultural value but also serve as a significant symbol of the city’s identity. To achieve a balance between historical preservation and sustainable development, Shanghai has implemented a series of innovative measures to ensure the long-term conservation and adaptive reuse of the Bund’s architectural heritage.

Scientific Restoration and the Principle of “Preserving the Old as It Was”

Shanghai adheres to the principle of “minimal intervention and preserving the old as it was” in its conservation efforts, focusing on structural reinforcement, material restoration, and facade maintenance to safeguard the authenticity and integrity of historic buildings.[8]

Modern digital technologies and intelligent monitoring technologies (such as Building information modeling (BIM) and 3D scanning) are employed to precisely assess building conditions, enhancing the scientific rigor and sustainability of restoration projects.

Green Building Renovation and Energy Efficiency Upgrades

During the restoration process, green building technologies are integrated, including energy-efficient glass, eco-friendly coatings, and smart lighting systems, to improve building energy efficiency and reduce carbon emissions.

Interior facilities of historic buildings are upgraded, optimizing heating, ventilation, and drainage systems, thereby enhancing functionality while minimizing energy consumption.

Cultural Revitalization and Functional Reuse

Through adaptive reuse, historical buildings are repurposed for new functions, such as museums, cultural centers, and high-end commercial spaces, ensuring their continued relevance in a modern urban context.

To foster public engagement, initiatives such as Bund Architectural Open Days, cultural exhibitions, and historical interpretation events are organized, strengthening public appreciation of cultural heritage and enhancing societal participation in conservation efforts.

Regulatory and Policy Frameworks

Shanghai has enacted the Regulations on the Protection of Historical and Cultural Areas and Outstanding Historical Buildings, establishing a strict architectural preservation approval system to ensure that restoration and renovation projects align with sustainable development principles.

A multi-stakeholder collaboration mechanism involving the government, private investment, and local residents has been established to promote long-term sustainability in conservation efforts through financial support, social investment, and property management coordination.

Smart Monitoring and Long-Term Maintenance

IoT (The Internet of Things (IoT) is a system of interrelated computing devices, mechanical systems, and digital machines, each equipped with a universally unique identifier (UUID) and capable of transmitting data over a network without requiring human-to-human or human-to-device interaction.) and big data monitoring systems are deployed to continuously track the structural health of Bund buildings, allowing for early detection and resolution of potential risks to ensure their long-term stability.

A dedicated maintenance management agency has been established to conduct regular inspections, restoration work, and long-term environmental assessments, adapting to climate change and evolving urban development needs.

Shanghai has developed a comprehensive and multi-faceted approach to the conservation and sustainable development of the Bund’s historical architecture, integrating scientific restoration, green

renovation, cultural revitalization, and smart management. This model not only effectively preserves the historical and cultural value of the Bund but also enhances its adaptability to modern urban dynamics, providing a valuable reference for global historic district conservation efforts.

CONCLUSIONS

This study examined the comprehensive restoration project of Normandie Apartment, an outstanding historic building in Shanghai, highlighting its innovative integration of architectural conservation, residential improvement, and urban safety management. The project adhered to the principle of “minimum intervention and restoration to original conditions,” successfully preserving the historical integrity of the building while enhancing its structural stability and residential comfort.

The findings of this research underscore the importance of balancing historical preservation with modern urban demands. By implementing systematic restoration techniques, reinforcing structural elements, and optimizing facility management, the project serves as a model for future historic building conservation efforts in urban environments. Additionally, the introduction of an information-based housing safety monitoring system demonstrates the potential for digital technology to enhance heritage management and urban governance.

However, certain limitations exist in this study. The restoration project, while comprehensive, faces challenges in long-term maintenance and public engagement. Future studies could explore sustainable conservation strategies and investigate residents’ perceptions and experiences post-restoration to further optimize the balance between heritage preservation and contemporary urban life.

This research provides valuable insights into urban heritage conservation practices and offers a replicable framework for cities aiming to integrate historic preservation with modern urban management. The successful restoration of Normandie Apartment not only enhances Shanghai’s cultural landscape but also sets a precedent for heritage conservation efforts worldwide.

REFERENCES

- [1] Hua Xiaohong, Michelle Qiao. 2013.1. *Shanghai Hudec Architecture*. Tongji University Press.
- [2] Shanghai Huangpu District Compilation Committee. 2003.3. Continuation of the Huangpu District Gazetteer. Shanghai Academy of Social Sciences Press.
- [3] Hudec Cultural Foundation. [Http://www.hudecproject.com/](http://www.hudecproject.com/).
- [4] China Central Television10.2024/12.Documentary Film Hudec.
- [5] China Architectural Preservation Online.
- [6] Shanghai Municipal Housing Administration.2022.3.Record of the Restoration Project of Normandie Apartment, an Outstanding Historic Building.
- [7] Regulations on the Protection of Historical and Cultural Heritage Areas and Outstanding Historical Buildings of Shanghai.Adopted at the 41st Meeting of the Standing Committee of the 11th Shanghai Municipal People’s Congress on July 25, 2002, and promulgated by Announcement No. 70 of the Standing Committee of the Shanghai Municipal People’s Congress on July 25, 2002.
- [8] Government Public Document,While Emphasizing conservation and restoration, it also encourages adaptive reuse, allowing historic buildings to “live” in the present. [Http://www.shhuangpu.gov.cn/](http://www.shhuangpu.gov.cn/).