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Heritage-Based Evaluation Criteria for French Colonial Architecture on Le Loi Street, Hue, Vietnam

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Abstract: The architectural legacy of the French colonial period forms a key part of Vietnam's urban identity, especially in Hue. Yet, this heritage is rapidly declining: from over 240 structures in 2000, fewer than 100 remain today. This study introduces a heritage-based evaluation framework to assess and preserve French colonial buildings using Le Loi Street, Hue's historic "Western quarter" as a pilot site. Fourteen colonial-era buildings were systematically assessed through field surveys and expert consultation. A total of 40 specialists participated in the criteria development process, and eight selected experts conducted detailed building evaluations. The final framework includes three main categories and nine specific criteria, based on a 100-point scale, incorporating architectural integrity, historical and cultural significance, contextual fit, and adaptive reuse potential. The results show that all the surveyed buildings qualify as Group A or B, warranting strict conservation or minimal renovation. The study emphasizes the value of localized, expert-informed approaches to heritage planning. The research provides a practical foundation for integrating historic architecture into context-sensitive urban conservation strategies in Hue and comparable Southeast Asian contexts.

Keywords: French colonial architecture; sustainable heritage; evaluation criteria; adaptive reuse; urban conservation

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1. Introduction

The French left a profound and lasting impact on the urban structure and architecture of their former colonies, including Vietnam. In Indochina, colonial cities underwent decades of transformation under French urban synchronization policies [1] (p. 163). The French implemented various urban planning and architectural models based on contextual needs. Nevertheless, French colonial architecture remains a valuable and increasingly endangered legacy, shaping the distinctive historical and spatial identities of urban landscapes across Indochina, including the ancient capital of Hue.

However, French colonial buildings in Hue have increasingly been deteriorating, demolished, or significantly altered due to unsystematic urban expansion and incompatible renovation projects. Compared to cities including Ho Chi Minh City, Hanoi, Hai Phong, and Da Lat, where colonial-era architectural heritage is more extensive, Hue's collection

of such structures remains modest [2]. In 2000, approximately 240 French colonial buildings were recorded in Hue [3]. By 2022, this number had declined to fewer than 100. Despite this loss, no comprehensive and official inventory has been produced to date. The existing research is fragmented and limited in scope: Le Minh Son [4] and Luong Lan Phuong [5] surveyed approximately 50 buildings each; Du Ton Hoang Long identified 64 structures [6]; and Nguyen Thi Hien estimated slightly over 50, noting the absence of a responsible documentation authority [7] (p. 136). The most extensive study as of 2022 recorded 77 colonial buildings in Hue [8]. These scattered findings indicate that the actual number of remaining French colonial buildings is only marginally above 77.

The last three years have witnessed the demolition of several colonial-era buildings, including the classrooms and meeting room of Nguyen Truong To Secondary School at 03 Nguyen Tri Phuong St. (2022), the former Thua Thien Hue Construction Enterprise 4 building at 42 Phan Chu Trinh St. (2023), the Mai Linh Taxi Company office at 177 Phan Dinh Phung St. (2023), and the Garden Coffee Show building on Ha Noi St. (2023). In addition, several other buildings remain vacant or await governmental decisions regarding their preservation, such as the former An Tan Phu Company building (148 Bui Thi Xuan St.), the old headquarters of the Union of Literature and Arts Associations (26 Le Loi St.), and a colonial-era structure at 3 Dong Da St. (Figure 1). These cases exemplify the ongoing erosion of architectural heritage in the absence of systematic monitoring and effective preservation policies.

(**a**) (b) (c)

Figure 1. Current condition of several abandoned French colonial buildings (as of February 2025). (**a**) An Tan Phu company; (**b**) old headquarters of the Union of Literature and Arts Associations; (**c**) building located at 3 Dong Da St. (Google coordinates: (**a**) 16.4550, 107.5690; (**b**) 16.4657, 107.5890; (**c**) 16.4588, 107.5897).

These alarming figures underscore the urgent need for comprehensive research and conservation efforts to safeguard Hue's French colonial architectural heritage. Architectural heritage is increasingly seen as an important part of sustainability [9]. It conveys cultural meaning, supports local economies through tourism, reduces environmental impact by reusing existing buildings, and strengthens community identity [10]. Some studies may view colonial-era buildings as outdated remains of the past [11], but these structures still hold significant value. They contribute to building cities' heritage and cultural identity. Recognizing their broader contributions reminds us why it is important to evaluate and preserve them with care and foresight.

To address these challenges, it is essential to assess the value of French colonial architecture in Hue to develop targeted, context-sensitive preservation strategies based on each building's significance. This will enable adaptive reuse approaches that reconcile heritage values with urban development needs in a contemporary context. Aligning with international sustainable heritage frameworks, this study seeks to establish a set of criteria for evaluating the architectural value of French colonial buildings in Hue, with a pilot assessment focusing on those located along Le Loi Street, historically known as the "Western quarter" of the city.

2. Literature Review

Aesthetic and historical values are central to heritage designation, as stated in Article 9 of the Venice Charter, which emphasizes that restoration aims to "*preserve and reveal the aesthetic and historic value of the monument*" [12] (p. 111). However, these values evolve over time and across the cultural, spatial, and typological contexts of heritage (unique or representative works). In response to this evolution, more recent international charters have supplemented the Venice Charter (2000) with updated approaches to heritage conservation. Notably, the Krakow Charter redefines authenticity as a sum of historically developed attributes, including both original elements and respectful transformations over time [13]. Similarly, the Nara Document on Authenticity (1994) [14] and UNESCO's Historic Urban Landscape Recommendation (2011) [15] emphasize culturally embedded, context-driven, and integrative strategies for evaluating and managing heritage values. Article 1 of the Venice Charter also indicates that the concept of historical monuments is applied not only to great works of art but also to more modest works of the past that have gained significance over time [12] (p. 110).

Heritage valuation varies across organizations and countries, each employing distinct definitions and evaluation frameworks. The purpose of such assessments is to affirm the significance and quality of a heritage site or object [16] (p. 8). UNESCO has established 10 criteria for evaluating cultural, mixed, and natural heritage, with 6 specifically dedicated to cultural relics [17]. New South Wales, Australia (NSW), applies seven criteria, including historical significance, historical linkage, aesthetic/creative/technical achievement, social and cultural significance, research potential, rarity, and representativeness [18] (p. 21). The Canadian government evaluates heritage based on five key aspects, which are architecture, history, environment, usability, and integrity [16]. In Quebec City, heritage assessment follows 12 criteria, covering aspects such as archaeological value, architectural value, artistic value, symbolic value, ethnographic value, historical value, identity value (for heritage only), landscape value, scientific value, social value, technical value, and urban planning value [19] (pp. 17–31). Meanwhile, France's monument protection regulations are based on four core criteria, which are history, aesthetics, science, and technology. In addition, other concepts of rarity, exemplarity, authenticity, and integrity of the property should be given particularly consideration [20]. Overall, Western countries have developed comprehensive heritage evaluation and conservation frameworks, incorporating structured mechanisms from initial investigation to listing and long-term preservation, as seen in the United Kingdom, France, Canada, and the United States [21] (pp. 3–4 of 19).

In Vietnam, the preservation of historical architecture has received increasing attention yet remains modest compared to Western countries. To assess the value of architectural heritage, the Vietnamese Government issued Decree 85/2020/ND-CP, which establishes two main criteria outlined in Article 3: (1) architectural and landscape artistic value and (2) historical and cultural value [22]. These are further divided into seven sub-criteria, with a total evaluation score of 200 points. Buildings are categorized into three groups: Type I (meeting both criteria, with at least 50 points per criterion and 80 points in architectural and landscape artistic value), Type II (meeting both criteria), and Type III (meeting at least one criterion). Tran Quoc Bao developed an evaluation framework for French colonial architecture in Hanoi based on eight criteria—six assessing the building itself (historical, cultural, social, artistic, technological, and construction-related values) and two evaluating contextual factors (internal and external surroundings). The system assigns a total of 100 points, classifying buildings into three levels: A (special value, 75–100 points), B (high value, 50–74 points), and C (average value, 20–49 points) [23]. Depending on the case, the weighting of assessment criteria can be adjusted. For example, in his study

of French townhouses in Hanoi's Old Quarter, Nguyen Quang Minh emphasized architectural value, proposing five criteria: architectural value (50 points), historical and cultural value (10 points), urban planning and landscape value (15 points), originality (15 points), and contemporaneity (10 points) [24].

Doan Minh Khoi's research evaluated French villas in Hanoi using five criteria: (1) cultural history; (2) architectural art; (3) urban planning and landscape; (4) originality; (5) usability. Meanwhile, assessments in Ho Chi Minh City applied four criteria: (1) cultural history; (2) architectural art; (3) current condition; (4) surrounding environment. The classification system categorizes villas into three types: Type 1—absolute preservation (over 70 points), Type 2—minor renovation permitted (50–69 points), and Type 3—major renovation or demolition considered based on deterioration and score (under 50 points). Villas scoring below 20 points are recommended for removal from preservation lists [25]. For French colonial schools in Hanoi, building value is determined by six internal criteria (history, age, culture, architecture, climate adaptation, and functional preservation conditions) and two external criteria (inside and outside the campus). These schools are evaluated on a 30-point scale and classified into three groups: Group 1—special value, Group 2—outstanding value, and Group 3—average value [26]. In Ho Chi Minh City, the People's Committee issued Decision No. 33, establishing six criteria for evaluating and classifying old villas: artistic architecture, urban landscape, cultural–historical significance, originality, integrity, and structural condition [27]. The first three criteria are considered primary, while the latter three are secondary.

The aforementioned studies on value assessment criteria reveal commonalities in key aspects, particularly historical, artistic (aesthetic and architectural), cultural, and social values. Depending on the specific context, additional criteria may be introduced or integrated into broader categories. Notably, Western countries place significant emphasis on integrity and originality. In Vietnam, all sets of criteria have a similarity based on the content of Decree 85. It can be divided into sub-criteria or other criteria that are suitable for the local context, or the architectural object can be added. Specifically, Decree 85 only provides two criteria for assessing value, but there are several sub-criteria that contain fairly complete assessment contents in many respects. For instance, the decree's first criterion, architectural and landscape value, encompasses architectural style and form, site context, urban landscape contribution, and construction techniques [22].

While existing heritage evaluation frameworks in Vietnam, particularly those derived from Decree 85, have contributed meaningfully to the discourse on architectural conservation, they remain generalized and largely shaped by the urban contexts of Hanoi and Ho Chi Minh City, where colonial buildings are more numerous and typologically consistent. In contrast, Hue presents a markedly different heritage landscape: although fewer in number, its French colonial structures are deeply integrated into the symbolic and spatial core of the former imperial city [4,6]. These buildings often exhibit hybrid characteristics, such as vernacular roof forms on French structural systems or façades adapted to Hue's climate and morphology reflecting a distinct architectural identity that remains largely unaddressed in existing evaluation criteria [7].

Furthermore, the urgency of a locally responsive framework is underscored by the loss of over 60% of Hue's colonial buildings since 2000 [3]. Evaluation systems in Vietnam also vary significantly from qualitative-to-quantitative conversions [16] to fixed-point schemes, i.e., as 200 points under Decree 85 [22], 100 points in Hanoi-based studies [23–25], or 30 points for school evaluations [26]. This variation highlights the absence of a standardized national approach and reinforces the need for a flexible, interdisciplinary model that can adapt to different building types, urban morphologies, and heritage values. Accordingly, this study proposes a localized, expert-informed framework for as-

sessing French colonial architecture in Hue, using Le Loi Street as a pilot area to demonstrate how morphology- and context-sensitive tools can support more effective heritage conservation.

3. Methods

Secondary data were collected by reviewing Vietnamese and international documents through academic publications and unpublished texts such as magazines, books, theses, dissertations, maps, etc. These materials formed the theoretical foundation for the study, providing perspectives on the historical, cultural, and urban development contexts of Hue. Furthermore, existing heritage assessment frameworks, especially those relating to French colonial architecture, were reviewed to support the synthesis of a tailored evaluation model.

Field surveys were conducted using systematic observation and photographic recording techniques to evaluate the physical condition of colonial-era buildings. The surveys documented architectural features, such as styles, ornamentation, and façade composition. Measured drawings of plans and elevations were produced to establish a visual record and support future conservation. The collected data included historical background, building age, construction materials, and structural integrity, forming a comprehensive and preservation-oriented dataset. Although structural safety and habitability performance were not primary criteria in this phase, their importance is fully recognized. These technical dimensions are essential for future stages of assessment and intervention planning, particularly for adaptive reuse and sustainable conservation strategies.

A consultation workshop involving 40 cross-disciplinary specialists—including architects, historians, cultural researchers, and experts in tourism and urban studies—was organized to discuss and refine the criteria for assessing French colonial architecture in Hue (Figure 2). The discussion focused on standardizing value attributes, defining assessment scoring, establishing classification levels, and addressing additional considerations.

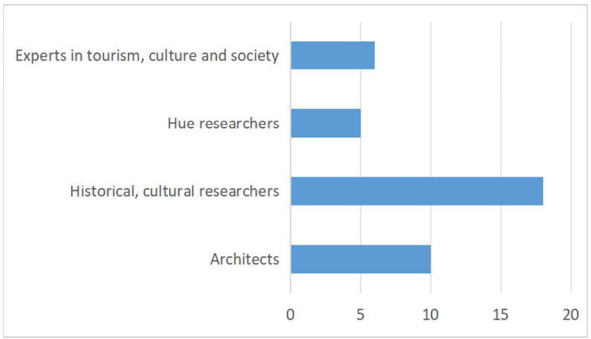


Figure 2. Classification of 40 experts.

A roundtable evaluation was conducted with selected experts from the initial group, chosen based on their domain knowledge of Le Loi Street and experience with colonial-era projects. These participants reviewed the survey results and applied the proposed evaluation criteria to each building. The session functioned as a pilot scoring exercise, generating consensus-based assessments and expert commentary on heritage value. The experts also provided strategic recommendations for the conservation, adaptive reuse, and future integration of the evaluated buildings into Hue's urban development plans. The research framework, from data collection to analysis and results, is illustrated in Figure 3.

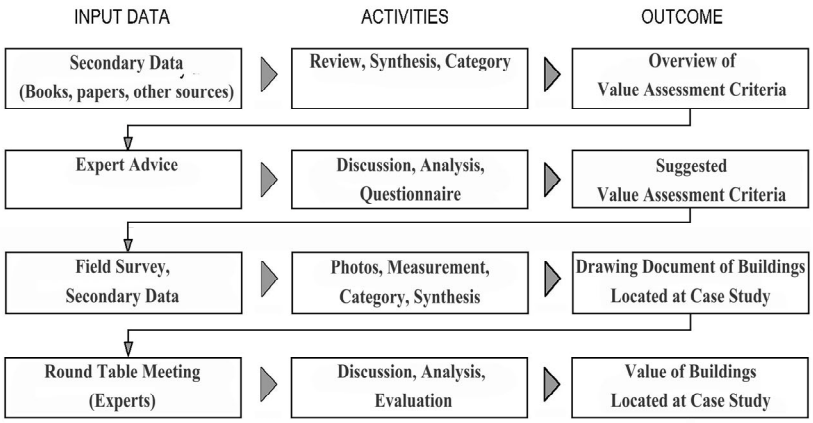


Figure 3. Process diagram of the study.

A panel of eight experts was invited to participate in a roundtable discussion in March 2025, with the purpose of evaluating the heritage value of French colonial buildings on Le Loi Street in Hue. These experts were selected from an initial pool of 40 professionals involved in the preliminary development of the evaluation criteria. Selection was based on demonstrated expertise in heritage conservation, French colonial architecture, and contextual knowledge of Hue City. All participants have published academic or professional work related to architectural heritage and possessed substantial experience in relevant conservation practices. Furthermore, they were chosen for their in-depth understanding of the historical and cultural fabric of Hue, particularly its colonial and imperial layers.

The final expert group included four senior architects and four historians or heritage researchers. Among them were professors and researchers from Hue University, Dong A University (Da Nang), and the Department of Culture, Sports, and Tourism. Others held positions at key institutions such as the Hue Monuments Conservation Center and the Hue Association of Architects. Their combined expertise spans architectural conservation, French colonial stylistics, European decorative influences, and the socio-historical context of educational and civic buildings in Hue. This diverse yet thematically aligned composition ensured a well-rounded and credible basis for expert-informed evaluation in the proposed framework.

4. Results and Discussion

4.1. Development of Evaluation Criteria for French Colonial Architecture in Hue

Hue, the ancient capital of Vietnam, served as the political and cultural center of the Nguyen dynasty. Compared to other Vietnamese cities, Hue has a relatively modest collection of French colonial architecture, and research on this subject remains limited. Until 2003, there had been no research on the architectural value of the French quarter in Hue [28] (p. 100). In 2018, the People's Committee of Thua Thien Hue province issued Decision 1152/QD-UB, listing 27 representative French colonial buildings as a basis for conservation and heritage promotion efforts [29]. However, the selection criteria were not clearly defined, and some listed structures were built after 1954, raising concerns about historical authenticity and selection transparency. While environmental and economic dimensions of sustainability are vital, they are beyond the scope of this study and may be addressed in future interdisciplinary research.

In order to orientate the preservation and promotion of the value of French colonial buildings in Hue, it is necessary to establish a set of criteria for assessing the value specifically of this type of architectural work. This study invited 40 experts in architecture, history, culture, and tourism to establish a consensus-based set of criteria on 27 September

2024. Drawing from previous studies on heritage evaluation, the research team proposed an initial framework comprising eight sub-criteria, divided into two categories: intrinsic architectural value (six criteria related to the building's historical, cultural, architectural, and technical characteristics) and contextual value (two criteria assessing its spatial and symbolic relationship with the urban environment). This structured 100-point system was developed to support expert-based classification of French colonial buildings in Hue.

The initial proposal was grounded in existing domestic frameworks, notably the eight-criteria system by Tran Quoc Bao [23], the weighted-value model for French townhouses by Nguyen Quang Minh [24], and the contextualized approach applied to colonial schools in Hanoi [26]. These studies provided valuable references on how to structure evaluation categories based on historical, architectural, and urban contextual dimensions.

During expert discussions, the majority endorsed the proposed criteria, with eight experts fully agreeing and the remainder suggesting minor modifications. Notably, experts emphasized the importance of integrating originality, the feasibility of adaptive reuse, and the extent of alterations from the original design, particularly for buildings that have undergone significant functional or structural changes. The final assessment framework was refined accordingly, with scoring adjustments based on the averaged expert evaluations (see Table 1, right column). To further clarify the contextual dimensions, "on-site value" captures the spatial coherence and architectural interaction of the building within its immediate environment, such as its relationship with adjacent structures, positioning, and visual integration at the plot level. In contrast, "off-site value" refers to the building's broader symbolic and perceptual role within the urban fabric, including its visibility, alignment with historic urban axes (e.g., Le Loi Street), and its contribution to the city's collective memory.

Table 1. Assessment criteria and suggested scores for French colonial architecture in Hue city.

General Criteria	Sub-Criteria	Suggested Score	Average Score of the Experts
Internal criteria	Historic value	0–10	0–11
	Chronological value	0–15	0–13
	Cultural value	0–10	0–11
	Social value	0–10	0–10
	Architectural value	0–15	0–15
	Technology and construction condition	0–10	0–10
External criteria	On-site value	0–10	0–10
	Off-site value	0–20	0–17
Other criteria	Feasibility for preservation; originality, new usage	0	0–3
Total		100	100

Architectural experts proposed increasing the score for "architectural and artistic value" to 20 points (two experts) and "cultural value" to 15 points (three experts). Meanwhile, historical experts suggested raising the "historical value" score from 10 to 15 points (four experts). Regarding the "age" criterion, the research team initially proposed a maximum score of 15 for buildings over 100 years old. However, 13 experts recommended a lower maximum score, with nine assigning a maximum of 10 points. Similarly, for the "off-site value", 20 experts agreed on a lower total score than initially proposed, with a final maximum of 17 points.

The experts reached a consensus on categorizing buildings into four groups: group A (special value, requiring strict preservation); group B (high value, can be renovated to suit the modern context); group C (limited heritage value, adaptive reuse or extensive

renovation); and group D (nonsignificant heritage value, considered for removal or alternative use). While some variation existed in proposed ranges for each group, consensus was ultimately reached on a four-tier scoring model. Group A includes scores from 75 to 100, Group B from 55 to 74, Group C from 25 to 54, and Group D below 25. Figure 4 illustrates the expert-based distribution across these categories.

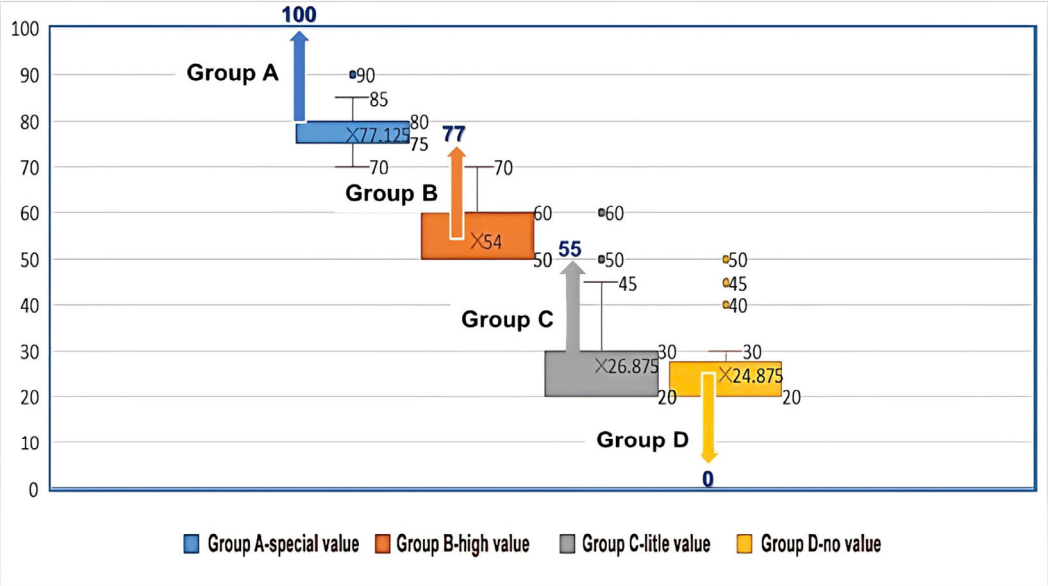


Figure 4. Group ranking by experts' score. Arrows indicate the score range for each group; "×" marks the average expert score at group thresholds.

Previous studies employed various classification methods, such as using two-thirds or half of the total score [24], averaging expert and research team scores [25], or relying on expert consultation [26]. This study adapted prior classification principles while enhancing transparency through expert averaging and rounding (Table 2). Since the raw averages resulted in non-rounded figures, the final classification was rounded to the nearest multiple of five. The final scoring system defined Group A as 75–100, Group B as 55–74, Group C as 25–54, and Group D as below 25.

Based on the established assessment criteria, the research team selected Le Loi Street in Hue City as a case study due to its density of colonial structures and symbolic urban role. During the colonial period, Le Loi Street was known as the "Western quarter" of Hue, and many French colonial buildings remain along this street today [30] (p. 50).

Table 2. Final classification of heritage value based on expert consensus and rounded scores.

	Group A	Group B	Group C	Group D
Average score	77.1–100	54–77	26.9–53	Under 24.3
Selected score after rounding	75–100	55–74	25–54	Under 25

4.2. Le Loi "Western" Street and French Colonial Buildings

4.2.1. Construction History of Le Loi Street During the Colonial Era

In a major period in Vietnamese history, France officially took control of the entire country following the Giap Than Treaty on 6 June 1884. Vietnam was then divided into three regions—Tonkin (North), Annam (Central), and Cochinchina (South)—with names derived from Chinese sources [31–33]. In Central Vietnam, although the Nguyen dynasty remained until 1945, real power was in French hands. Urban planning and construction strategies varied by region to align with French colonial objectives. In Hue, the French

established a European-style urban district on the southern bank of the Huong river, adjacent to the traditional royal capital on the northern bank. The initial development focused on a riverfront corridor along Le Loi Street (formerly Jules Ferry), later expanding further south [30] (p. 50) [31] (p. 581). The first colonial structure on the southern bank was the Resident Superior's building (L1 in Figure 5, located at 54 Le Loi today), originally built in 1876 but later demolished and reconstructed. The building was originally an ambassadorial residence until the tenure of Governor-General Paul Doumer (1896–1902), when it became the Resident Superior's building [30–32]. Constructed in 1876 and completed in July 1878, it served as the administrative center of the French government in Annam. In 1945, the building collapsed; today, its site houses the University of Education, Hue University [34,35]. Other buildings constructed during this period were mostly destroyed, and new ones were built, such as the Resident Office (L3), the Palace of the Resident (L4), and the administrative center of Thua Thien Provincial Government (L5). The Resident Office (the administrative office of the Resident Palace) was built in 1886 and now serves as the Ho Chi Minh Museum at 7 Le Loi St. [36] (p. 17). The Resident Palace, initially constructed in 1897 (or 1907) and later rebuilt, is now Hue Children's House at 8 Le Loi St. [37] (p. 288). The administrative center of Thua Thien Provincial Government, known in French as "Hôtel du Chef de la Province", was originally located inside the citadel but was relocated to 16 Le Loi St. in 1899. Today, it serves as the Hue City People's Committee [34] (p. 583); [37] (p. 286).

Quoc Hoc School (No. 6), originally named "École Primaire Supérieure", is located at 12 Le Loi St. It was constructed in 1896 and was largely rebuilt after 1915 into its present form [30] (p. 52) [31] (pp. 226–244). In this period, Paul Doumer's memoirs (1897–1902) mention several other structures on Le Loi Street, including Truong Tien Bridge (L2), Morin Saigon Hotel (No. 13), and villas at 26 Le Loi and 4 Hoang Hoa Tham (No. 10 and 12 in Figure 5). Truong Tien Bridge, built by Schneider et Cie et Letellier in 1897 and completed in 1900, was initially named after King Thanh Thai. Over time, the bridge has undergone multiple reconstructions due to war and weather-related damage [38]. The Saigon Morin Hotel, built in 1901 and situated at 30 Le Loi St., was the first hotel in Annam. Its original owner was French businessman Henri Bogaert. The hotel originally had two floors, and then, it underwent several renovations and was expanded to four stories in 1995 [37] (pp. 277–278) [39] (p. 256). The villa at 4 Hoang Hoa Tham St. falls within the property boundaries of 28 Le Loi St. This villa, along with the one at 26 Le Loi St., was described in Paul Doumer's memoirs from his tenure as Indochina Governor-General (1897–1902) [40] (p. 289) [41] (p. 113).

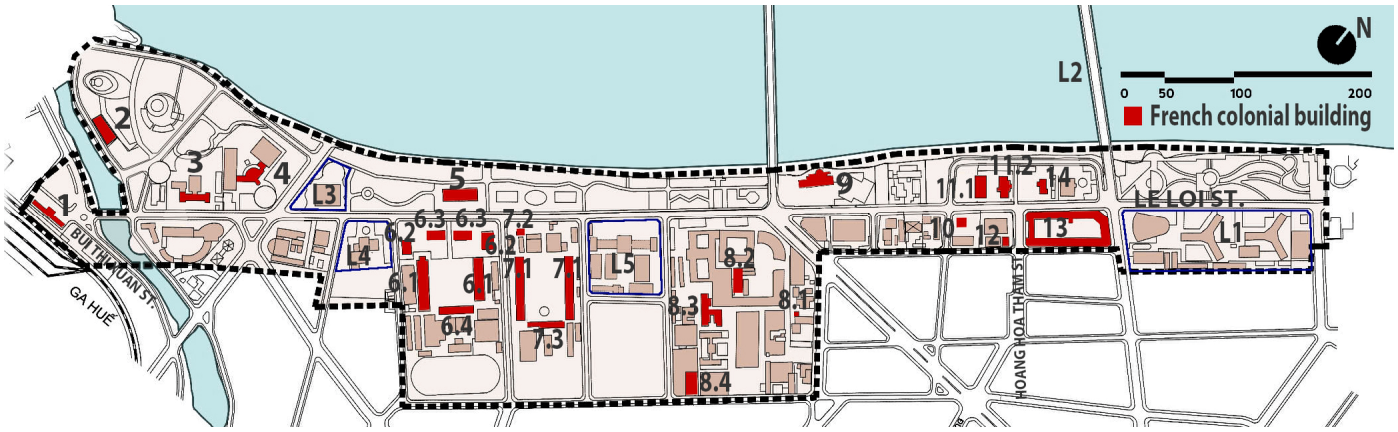


Figure 5. Distribution map of French colonial buildings located along Le Loi St.

In the early 20th century, additional buildings emerged, many of which still exist today: Hue Central Hospital (No. 8); the Hue Academy of Music (No. 2); the Cultural, Sports, and Tourism Center of Hue (No. 11); Diem Phung Thi Museum (No. 14); the War Memorial (No. 5); and Hue Railway Station (No. 1). The extension of Le Loi St. intersects with Bui Thi Xuan St. at Hue Railway Station, which was completed on 15 December 1906 [42] (p. 7). Hue Central Hospital was founded in 1887 along the Huong River but was relocated to its present site in 1894. Most of the hospital's buildings were constructed after 1905, as a 1904 storm destroyed earlier structures. By 1910, approximately 25 buildings existed within the hospital campus [43] (p. 47) [37] (p. 286). Pellerin School was founded in 1905 by Lasallian Brother Aglibert. After renovations in 2008, it became the Hue Academy of Music [44] (p. 321). The Diem Phung Thi Museum was originally the Annam Public Works Office, constructed in 1891 [37] (pp. 277–278). However, another study suggests a construction date of circa 1910 [45]. The Cultural, Sports, and Tourism Center of Hue City was formerly the headquarters of the Annam Civil Construction Department, built around 1920 [30] (p. 54) [37] (pp. 283–284); [46] (p. 258). The War Memorial, located opposite Quoc Hoc High School, was inaugurated on 23 September 1920 [47].

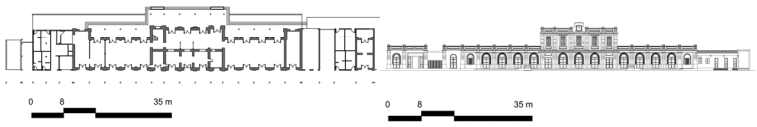
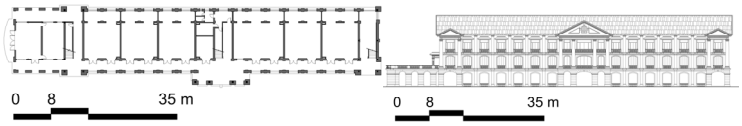
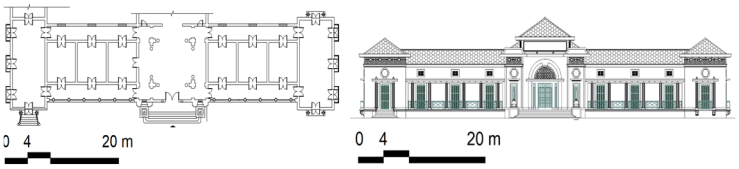
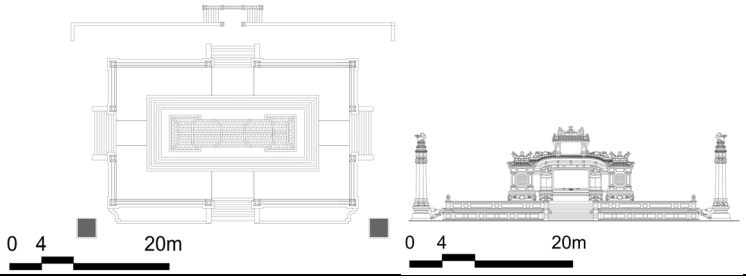
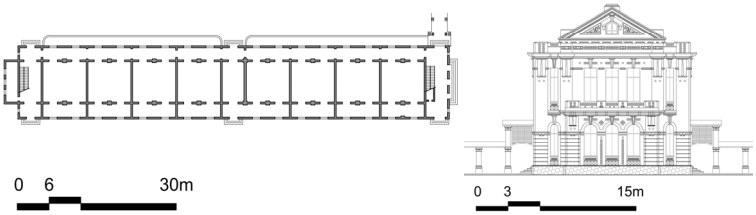
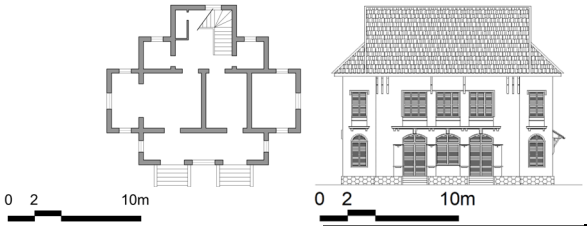
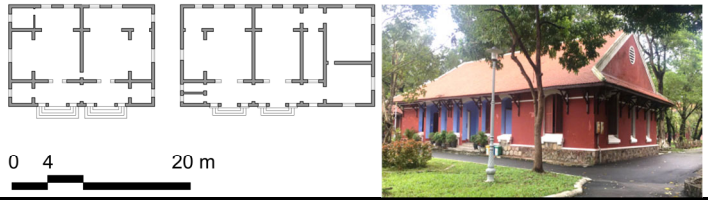
After 1920, several modern-style buildings were constructed along the research route, many of which still exist today, including the Hue University headquarters (No. 3), the Azerai Hotel (No. 4), and the Le Cercle building (No. 9). The Azerai Hotel was originally the Governor's Residence, built in the 1930s [4] (p. 169) [37] (p. 289) or possibly in 1935, as noted by Nguyen Dinh Toan [45]. The Hue University headquarters was formerly the Annam House of Representatives, built in 1927 [37] (p. 289). The Sport Club (Cercle Sportif) was constructed around 1940 [6,46]. Additionally, some structures have been demolished, rebuilt, or lack clear historical records, such as the former Indochina Bank Branch (20 Le Loi St., now the Hue University Learning Resource Center) and the Le Ba Dang Exhibition Space (15 Le Loi St.). Currently, 14 French colonial buildings remain on Le Loi Street. Quoc Hoc High School, Hai Ba Trung High School, and Hue Central Hospital contain multiple French colonial-era buildings within their premises. In total, 27 French colonial buildings along Le Loi St. remain intact. Among them, the buildings numbered 6.1, 6.2, 6.3, and 7.1 have two identical individual projects.

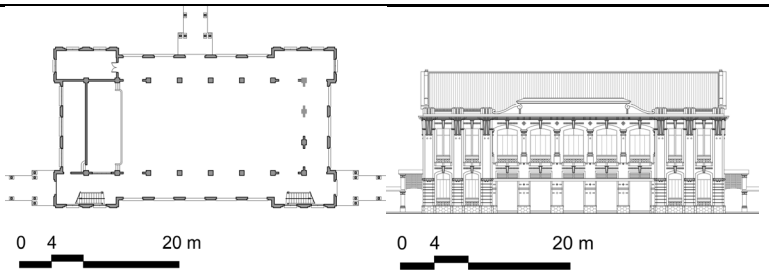
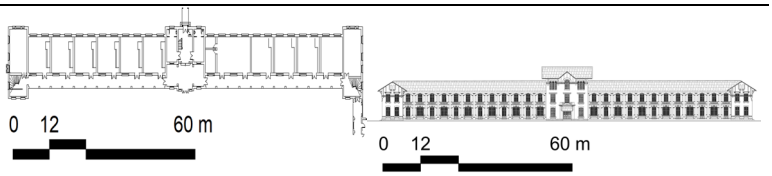
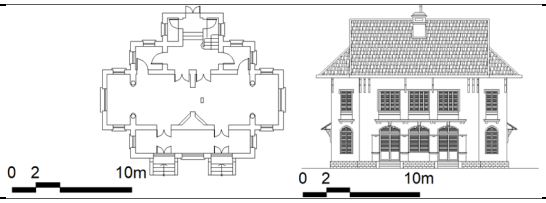
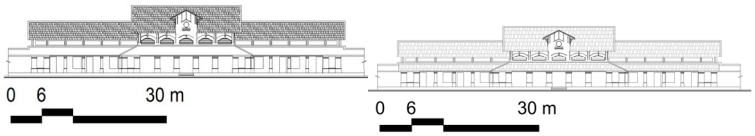
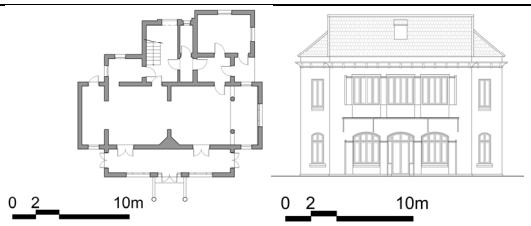
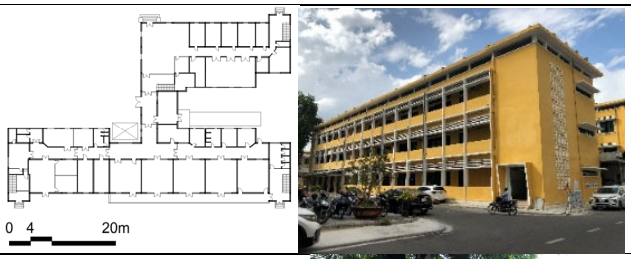
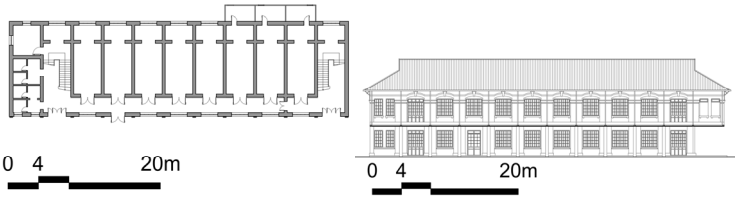
Most of these buildings have undergone renovations, though their external architectural features remain largely intact, except for the Saigon Morin Hotel, which was expanded from two to four stories. Some buildings, such as 26 Le Loi St. (No. 10), have been structurally reinforced, while others—such as the exhibition house at Hue Central Hospital, Hue Railway Station, Hue Academy of Music, and classrooms at Hai Ba Trung High School—have undergone minor façade modifications. Many buildings have also changed functions from their original use. For example, the Hue University headquarters was formerly the Annam House of Representatives; Azerai Hotel was the Governor's Residence; the Center for Culture, Information, and Sports of Hue was the Annam Public Works Office; and the Diem Phung Thi Museum previously served the same function.

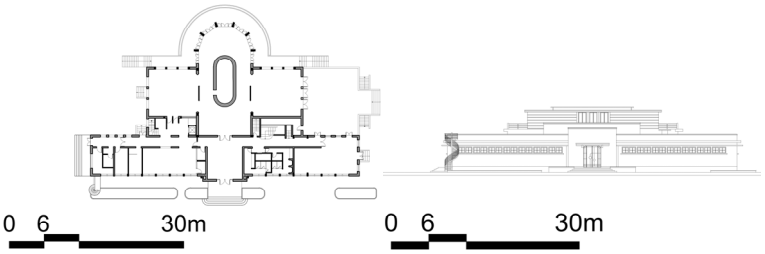
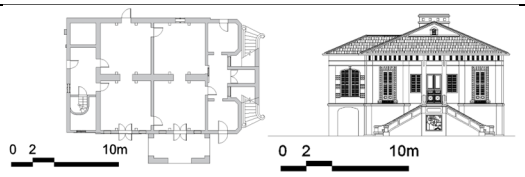
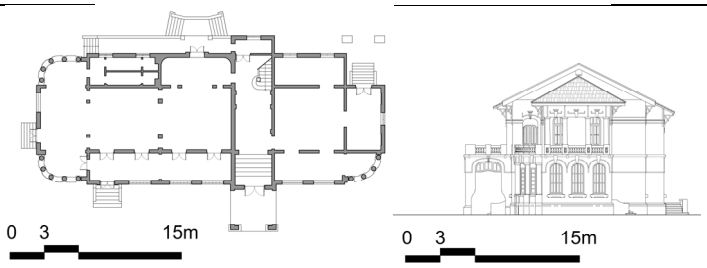
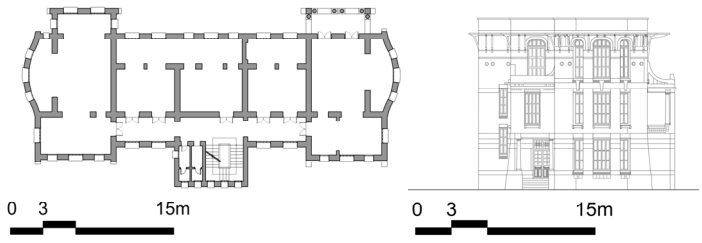
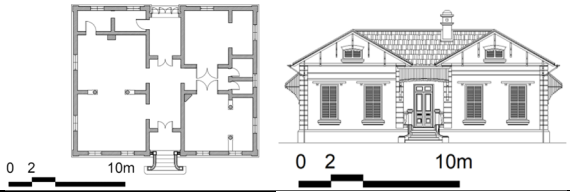
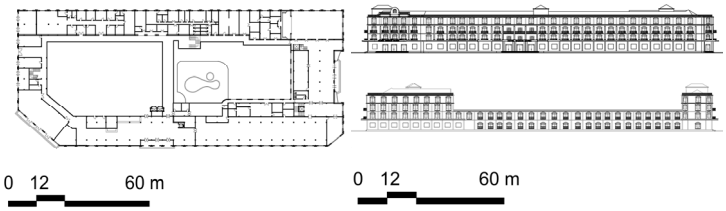
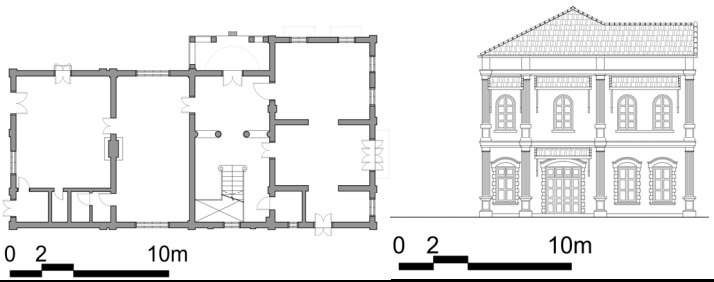
The existing buildings on Le Loi St. were surveyed via observations, photography, and measurements to obtain a current model of the architectural plan, elevation, structure, and function, as shown in Table 3. Previous studies have shown that French colonial architecture in Vietnam can be divided into five main styles: Pre-colonial architecture (barracks architecture), Western classical architecture (or Neoclassical architecture), French local architecture (French folk architecture), Art Deco (or Art Nouveau), and Indochina architecture [48–50]. Pre-colonial architecture appeared in the early colonial period, and then, Neoclassical architecture appeared in the early 20th century; some villas built before 1900 also had this style [50] (p. 30). After 1900, the French local architectural style (1900–1920), the Indochina style (1920–1930), and the Art Deco style (1930–1945) gradually appeared in Vietnam [25]. This period division of architectural styles is only relative because

every architectural style also expresses the mixing of modern forms with traditional patterns that meet the local context [1] (p. 11).

Table 3. Information about the French colonial buildings located at Le Loi St.

ID	Name/Address/Google Coordinates	Building Date/Area (sq.m) and Number of Floors/Designer/Conditions	Drawing/Photos
1	- Hue Railway Station - 2 Bui Thi Xuan St. - 16.4565, 107.5781	- 1906 - 735—2 floors - French architect - Neoclassical architecture - Mainly kept its original form; renovated at front corridor	
2	- Hue Academy of Music - 1 Le Loi St. - 16.4583, 107.5780	- 1905 - 1160—3 floors - French architect - Neoclassical architecture - Renovated	
3	- Hue University - 3 Le Loi St. - 16.4583, 107.5796	- 1927 - 695—1 floor - French architect - Neoclassical architecture - Mainly kept its original form	
4	- Azerai Hotel - 5 Le Loi St. - 16.4591, 107.5802	- 1930–1935 - 765—2.5 floors - French architect - Art Deco; - Mainly kept its original form; transferred to hotel	
5	- War Memorial - Le Loi St. - 16.4610, 107.5825	- 1920 - 558—1 floor - Painter Ton That Sa - Indochina - Mainly kept its original form	
6.1	- Quoc Hoc High School (classroom) - 12 Le Loi St. - 16.4597, 107.5831	- After 1915 - 1158—2 floors - Contractor Leroy - Neoclassical architecture - Mainly kept its original form; renovated facades	
6.2	- Quoc Hoc High School (exhibition house) - 12 Le Loi St. - 16.4600, 107.5826	- After 1915 - 129—2 floors - Contractor Leroy - French local architecture - Mainly kept its original form	
6.3	- Quoc Hoc High School (headquarters) - 12 Le Loi St. - 16.4603, 107.5829	- After 1915 - 432—1 floor - Contractor Leroy - Pre-colonial architecture - Mainly kept its original form	

6.4	- Quoc Hoc High School (conference room) - 12 Le Loi St. - 16.4596, 107.5838	- After 1915 - 685—2 floors - Contractor Leroy - Neoclassical architecture - Extended into 2 stories		
7.1	- Hai Ba Trung High School (classroom) - 14 Le Loi St. - 16.4605, 107.5844	- 1917 - 1606—2 floors - French local architecture - Mainly kept its original form		
7.2	- Hai Ba Trung High School (headquarters) - 14 Le Loi St. - 16.4611, 107.5839	- 1917 - 129—2 floors - French local architecture - Mainly kept its original form		
7.3	- Hai Ba Trung High School (Main Hall) - 14 Le Loi St. - 16.4603, 107.5851	- 1917 - 690—1 floor - Indochinese architecture - Mainly kept its original form		
8.1	- Hue Central Hospital (exhibition house) - 18 Le Loi St. - 16.4628, 107.5880	- 1907 - 179—1 floor - French architect - French local architecture - Renovated		
8.2	- Hue Central Hospital (Obstetrics & Gynecology Center) - 18 Le Loi St. - 16.4628, 107.5880	- 1907 - 1097—3 floors - French architect - Pre-colonial architecture - Mainly kept its original form; few renovations		
8.3	- Hue Central Hospital (Pathology Department) - 18 Le Loi St. - 16.4628, 107.5880	- 1907 - 471—1 floor - French architect - Neoclassical architecture - Renovated		
8.4	- Hue Central Hospital (Neurosurgery Department) - 18 Le Loi St. - 16.4628, 107.5880	- 1907 - 556—2 floors - French architect - Pre-colonial architecture - Mainly kept its original form; few renovation		

9	- Le Cercle - 11 Le Loi St. - 16.4647, 107.5869	- 1940 - 796—2.5 floors - French architect - Style: Art Deco - Few renovations	
10	- Colonial Villa - 26 Le Loi St. - 16.4659, 107.5890	- Before 1903 - 192—2 floors - French local architecture - Mainly kept its original form; currently vacant	
11.1	- Cultural, Sports, and Tourism Center - 23 Le Loi St. - 16.4664, 107.5888	- Before 1920s - 356—2 floors - French architect - Neoclassical architecture - Mainly kept its original form	
11.2	- Cultural, Sports, and Tourism Center - 25 Le Loi St. - 16.4665, 107.5891	- 1920s - 415—2 floors - French architect - Neoclassical architecture - Mainly kept its original form	
12	- Colonial villa - 4 Hoang Hoa Tham St. - 16.4659, 107.5897	- Before 1903 - 198—1 floor - French local architecture - Mainly kept its original form; currently vacant	
13	- Saigon Morin Hotel - 30 Le Loi St. - 16.4667, 107.5902	- 1901 - 4962—4 floors - French architect - Neoclassical architecture - Renovated and extended into 4 stories	
14	- Diem Phung Thi Museum - 27 Le Loi St. - 16.4669, 107.5896	- 1910s - 259—2 floors - French architect - Classical and French local architecture - Mainly kept its original form	

(Note: the measurement survey could not be carried out for several buildings that are currently in regular use, so the research team used photographs).

In Hue, French colonial buildings can be divided into six styles based on the architectural forms and features: Pre-colonial architecture; Neoclassical architecture; French local architecture; Eurasian architecture (or Indochine); and other architectural styles [8]

(pp. 37–38). Most of the surveyed buildings on Le Loi St. are influenced by the Neoclassical style that can be clearly observed in 10 buildings (Figure 6). This style is defined by its symmetrical and clear facades, with vertical divisions on the axes simulating classical column orders, and the system of windows and doors is evenly balanced [51,52].

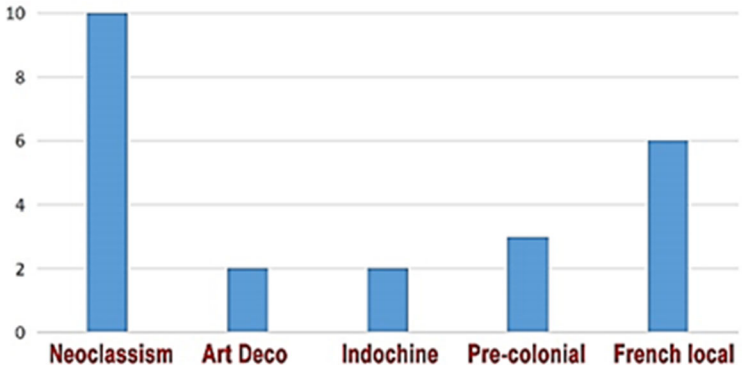


Figure 6. Classification of the architectural styles of the French colonial buildings on Le Loi St.

French local architecture, also known as French folk architecture, is evident in six buildings, primarily schools and villas. The villas are characterized by sloped roofs with prominent chimneys and wooden cantilevers, either single or double, supporting the roof structure. Schools, on the other hand, typically feature symmetrical floor plans and façades, with a central section that protrudes and rises higher than the two wings, creating a focal point. These buildings also incorporate many single or double wooden cantilevers to support gable roofs [8] (pp. 41–42) [49] (pp. 301–305).

The Art Deco style is represented in the Azerai Hotel and Le Cercle Restaurant, distinguished by clear geometric forms, minimal decorative elements, and large horizontal walls. Curved central blocks are often used to create visual interest [8] (p. 40). Buildings in this style were generally constructed after 1925, following the influence of the "L'Exposition Internationale des Arts Décoratifs et Industriels Modernes" in Paris [53] (p. 1). Similar trends were observed in Hanoi, where Art Deco villas were predominantly built between 1930 and 1945 [50] (p. 303).

Pre-colonial architectural influences can be found in three buildings within Quoc Hoc High School and Hue Central Hospital. These structures are characterized by simple block forms, surrounding corridors, and staircases positioned at both ends. They typically feature four-sloped roofs and a two-layer door and window system, with glass panels inside and wooden shutters outside [49] (p. 278). The Indochinese architectural style, which combines Western functional and structural elements with traditional Vietnamese or royal aesthetics, is exemplified by two buildings on Le Loi Street: the War Memorial and the Playhouse at Hai Ba Trung School. The War Memorial resembles a traditional Hue masonry screen, incorporating familiar local motifs. The Playhouse, a single-story structure with a steel truss frame, features a multi-layered roof system designed to enhance height and spatial perception, evoking traditional multi-tiered Hue architecture. Regarding age, 19 of the surveyed buildings are over 100 years old, while the remaining structures have stood for more than 75 years.

4.2.2. Value of the French Colonial Buildings on Le Loi Street

During the discussion, some experts again reviewed the selected evaluation criteria and proposed streamlining them by merging architectural and cultural criteria, combining social criteria with other aspects, and integrating historical criteria with chronological aspects. Additionally, the eight experts emphasized the importance of assessing the feasibility of the current and future functions of the buildings, particularly their adaptability

to contemporary urban contexts. One expert mentioned the exact percentage of the change in the buildings after renovation compared to their original forms. These insights underscore the need for a more meticulous and comprehensive approach to establishing evaluation criteria. The discussion also revealed that each expert, based on their unique perspective, had differing views on the assessment framework. Ultimately, a consensus was reached to apply the agreed-upon criteria to evaluate the buildings on Le Loi Street using the documentation provided by the research team, as shown in Table 2.

Figure 7 presents the experts' assessment of the French colonial buildings on Le Loi Street. According to the results, 14 out of 23 buildings (61%) were classified as Group A (average score ≥75), while the remaining 9 buildings (39%) were assigned to Group B (score range: 55–74). No buildings were placed into Groups C or D, suggesting that all surveyed structures retain substantial historical and architectural significance. The highest-rated building was no. 3 (Hue University), with an average score of 86.5 and a low standard deviation of 4.6, indicating a high level of inter-expert agreement. Other top-performing buildings included no. 14 (84.0), no. 5 (85.8), no. 11.1 (85), and no. 11.2 (85.9), all recognized for their architectural integrity, original façade preservation, and continued public function. In contrast, Group B buildings showed greater variability in both scoring and standard deviation, indicating less agreement among experts and greater alteration from original forms. For instance, no. 2 (Hue Academy of Music) received a score of 64.6 ± 11.6 due to significant structural renovations, which have considerably altered its original character. No. 8.2 (Hospital Block) had the lowest score (61.5 ± 13.1), with experts citing poor material retention and functional repurposing.

The expert panel also noted that buildings such as no. 7.2 (76.4 ± 12.5) and no. 8.4 (70.0 ± 8.7) were borderline cases, where classification fluctuated based on weighting of architectural integrity versus contextual value. High standard deviations, such as in no. 7.3 (75.5 ± 15.4) and no. 8.1 (71.9 ± 15.3), reflected divergent professional judgments, often influenced by ambiguous documentation, inconsistent interventions, or uncertain historical relevance. Among the top-tier Group A buildings, Hue University (no. 3) was praised for its composite volumetric layout three convex and two concave wings and stylistic continuity even after recent extensions. Its current role as an administrative headquarters also enhances its value as a civic monument. Similarly, the War Memorial (no. 5) was lauded for its Indochinese hybrid design, integrating French masonry techniques with Vietnamese iconography, and for its open setting along the Huong River, reinforcing its ceremonial function. The Hue City Cultural, Sports, and Tourism Center buildings (no. 11.1 and no. 11.2) were rated highly for their exceptionally well-preserved façades, active cultural programming, and contextual harmony. These structures serve as anchors of continuity in Hue's evolving urban landscape. By contrast, Group B villas such as no. 12 (64.5 ± 5.8) were deemed less impactful due to deteriorated physical conditions, inconsistent use, and limited contribution to the street's visual identity. Several of these are currently vacant or underutilized, raising concerns about long-term sustainability and conservation feasibility.

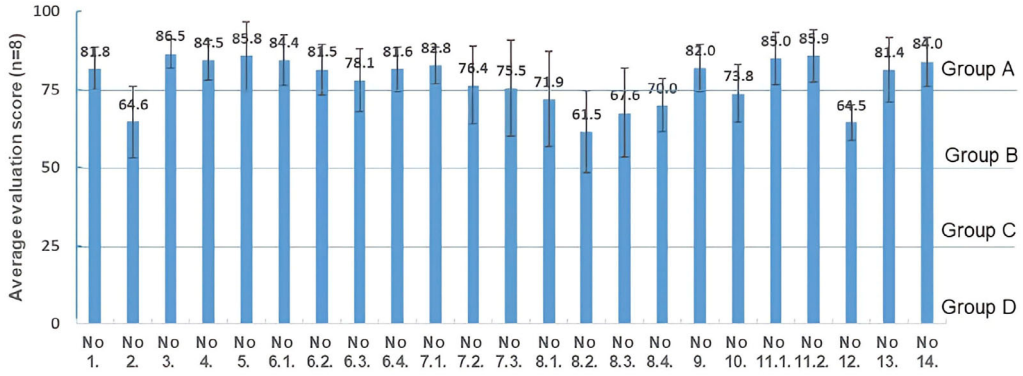


Figure 7. Average expert evaluation scores of French colonial buildings on Le Loi Street, n = 8.

In summary, the evaluation outcomes revealed a strong consensus among experts regarding the heritage value hierarchy of the surveyed buildings. The scoring consistency in Group A reflects robust architectural authenticity, while the score dispersion in Group B highlights areas requiring more targeted policy intervention. Collectively, the data confirm that Le Loi Street's colonial-era structures form a cultural spine within Hue's historic urban core, worthy of integrated conservation, adaptive reuse, and long-term strategic planning.

5. Conclusions

French colonial architecture in Vietnam has faced widespread demolition and transformation, often without systematic evaluation. In Hue, this architectural legacy, though represented by fewer buildings than in other cities, embodies unique cultural, historical, and spatial narratives. However, the absence of an official inventory and structured conservation mechanisms has accelerated its degradation.

This study introduces a sustainability-oriented evaluation framework, comprising three major groups and nine specific criteria, which was applied to 14 colonial-era buildings on Le Loi Street. Developed through expert consultation with 40 specialists and applied by a core group of eight experts, the framework enables multi-dimensional assessment based on architectural, historical, and contextual value. The results showed that over 50% of the buildings were rated as Group A or B, suggesting strong eligibility for preservation or adaptive reuse.

Beyond offering a replicable assessment tool, this study highlights the importance of integrating long-term usability, contextual sensitivity, and functional adaptability into heritage planning. It aligns with global strategies such as UNESCO's Historic Urban Landscape [15]. The proposed approach is applicable beyond Hue, offering local governments, planners, and researchers a practical method for embedding architectural heritage into sustainable urban development—particularly in rapidly transforming postcolonial cities across Southeast Asia.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data are contained in the article.

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