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Heritage-Driven Revitalization of Indrapurwa Mosque: A Conceptual Design Study

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Abstract

The Indrapurwa Mosque, located in Lamguron Village, Aceh Besar, Indonesia, is a significant historical site dating back to the Aceh Sultanate period. However, following the 2004 earthquake and tsunami, the mosque has experienced physical degradation and diminished public recognition. As part of the historical spatial network of Aceh Lhee Sagoe, the mosque requires a systematic and context-sensitive preservation approach to safeguard its historical and cultural values. This study aims to formulate a revitalization concept for the Indrapurwa Mosque complex by using its original architectural character as the primary design foundation. This research employs a qualitative descriptive method, integrating field observations, interviews, and historical literature review. The study is conducted in two main stages. The first stage involves identifying and analyzing the architectural character of the original Indrapurwa Mosque, including its tiered (*tumpang*) roof typology, structural system, materiality, and spatial organization. The second stage translates these characteristics into design parameters for the revitalization of the mosque complex, adapted to contemporary functional and spatial requirements. The findings demonstrate that integrating traditional Nusantara architectural character into the design framework can effectively restore the identity of the Indrapurwa Mosque while maintaining historical continuity. The proposed revitalization concept balances preservation and development by reinterpreting architectural values into a contemporary context. This research contributes both theoretically and practically, offering a character-based revitalization approach and providing a reference for the design and preservation of historic religious architecture in Aceh that is rooted in local cultural heritage.

Introduction

One of Aceh's historically significant landmarks is the Indrapurwa Mosque, situated in Lamguron Village in the Peukan Bada area of Aceh Besar Regency, on the northern tip of Sumatra, Indonesia [1]. This mosque is part of the historical Aceh Lhee Sagoe area, along with the Indrapuri Mosque and Indrapatra Fortress, which once played a strategic role in the political and religious development of the Aceh Sultanate [2]. However, the existence of the Indrapurwa Mosque today tends to be marginalized, both physically and in the collective awareness of the community.

Damage caused by the 2004 earthquake and tsunami, as well as the mosque's relatively distant location from the city center, has contributed to the lack of attention in preservation efforts [3,4]. The situation is further complicated by the presence of two mosque buildings: one constructed after the 2004 tsunami and a replica mosque. The replica, however, is less recognized due to its location, which is not directly visible from the main road. This phenomenon indicates a disconnect between historical value, physical condition, and public understanding of the site's significance.

Previous studies have examined the Indrapurwa Mosque from various perspectives. Shara et al., in a study on site analysis and architectural value, highlight the relocation of the mosque and its importance as architectural heritage [1]. However, this research does not specifically examine the form and façade characteristics of the original mosque as a basis for developing a revitalization concept.

A review of the literature shows that research on the revitalization of historic mosques in Aceh generally focuses on relocation issues [1], post-disaster physical condition assessments, or macro-level planning and design recommendations for mosque complexes after disasters. To date, no study has specifically integrated a historical façade analysis into the formulation of a design concept for site revitalization. Other studies on the Aceh Besar area and nearby historical sites, such as the Indrapuri Mosque and Indrapatra Fortress, provide broader historical context on the region's development during the Aceh Sultanate period [5,6]. Nevertheless, studies that specifically address the Indrapurwa Mosque in relation to its architectural character and revitalization concept remain limited. The novelty of this research lies in bridging the gap between historical architectural documentation and the formulation of revitalization design guidelines rooted in the building's original character while accommodating contemporary needs.

In the context of heritage preservation, revitalization is understood as an effort to revive an area or building while maintaining its historical, cultural, and identity values, and adapting it to present-day needs [7]. Revitalization is not merely physical restoration but also involves strengthening the building's meaning, function, and role in community life [8]. This approach aligns with preservation principles that emphasize understanding a building's significance before any design intervention is undertaken [9].

These three frameworks complement one another: Danisworo emphasizes continuity of identity [7], Shirvani highlights the vitality of social function [8], and the International Council on Monuments and Sites (ICOMOS) stresses the assessment of significance before intervention [9]. In the context of Islamic-Nusantara heritage, this approach must also consider the preservation of sacred values, worship-based spatial organization, and the local architectural wisdom of Aceh. Therefore, the revitalization of the Indrapurwa Mosque must not only follow universal conservation principles but also incorporate Islamic values and the sustainability of Acehnese coastal architectural traditions.

Accordingly, this study examines the characteristics of the old Indrapurwa Mosque and its replica through archival documentation, comparing the original mosque before the tsunami with its current form. The historical study emphasizes façade characteristics to derive a comprehensive understanding of the mosque's architectural identity, which can later be implemented in the conceptual design of the mosque complex. Thus, the proposed revitalization of the complex (including its supporting facilities) is not solely oriented toward physical development, but also grounded in the historical values and architectural character of the Indrapurwa Mosque.

Specifically, this research has two main objectives: (1) to conduct a historical study based on the mosque's façade characteristics, and (2) to provide design concept recommendations for the Indrapurwa Mosque complex based on the results of the historical analysis while adapting to current spatial needs.

In practical terms, the results of this study are expected to serve as a conceptual recommendation for the mosque management (DKM Indrapurwa Mosque) and the Aceh Besar Regency Government in organizing an inclusive mosque area. Whenever revitalization is required, the proposed concept can serve as a reference model.

Materials and Methods

This study employs a qualitative descriptive approach to understand the architectural character of Indrapurwa Mosque and to formulate a revitalization concept grounded in historical values and the contemporary context. The qualitative approach was chosen because it can uncover meanings, values, and architectural character that cannot be measured quantitatively [10].

Data collection was carried out through several techniques: direct field observation, in-depth interviews, visual documentation, and literature review. Field observation was conducted directly at the Indrapurwa Mosque complex to identify the existing conditions, architectural elements, and spatial patterns present. Interviews were conducted purposively with informants knowledgeable about the mosque's history and development, including traditional/customary leaders (*tokoh adat*), mosque administrators, and residents who witnessed changes to the mosque before and after the 2004 tsunami.

Visual documentation in the form of photos and videos was used as supporting data to reconstruct the form and character of the old mosque. This visual data was analyzed by identifying architectural elements such as spatial typologies, structural systems, materials, and facade elements. To ensure the validity of the data, triangulation was performed by cross-referencing interview results, visual documentation, and literary references [11].

Data analysis was conducted using a thematic approach, in which the collected data were categorized by the main architectural elements: space, facade, and site arrangement. A comparative analysis with old mosques in Aceh that share similar typologies, such as Indrapuri Mosque, was also performed to strengthen the interpretation of the identified architectural character.

The research proceeded in two main stages. The first stage involved identifying the architectural character of the old Indrapurwa Mosque through spatial morphology and facade analysis. The second stage involved transforming those characteristics into a revitalization design concept for the complex, taking into account functional needs, social aspects, and the principles of contextual contemporary architecture. With this approach, the research not only produces a description of architectural character but also generates a revitalization concept with a strong theoretical and methodological basis.

Results and Discussion

The Indrapurwa Mosque complex is situated in the Kemukiman Lampageu area (a sub-district administrative unit in Aceh). The name Lampageu holds historical significance, derived from the word *pageu*, meaning 'fence' or 'boundary wall,' indicating that the settlement was enclosed and bounded—reflecting its geographic isolation at the very tip of the Sumatran landmass, accessible only by a single road (*Kemukiman Lampageu*). The mosque has also undergone several relocations, and its current site represents the third location of Indrapurwa Mosque [1]. These location shifts are illustrated in Figure 1.

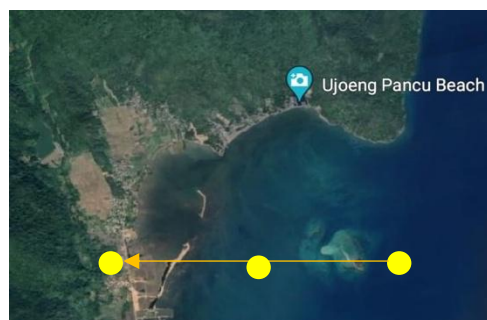


Figure 1. Location shifts of Indrapurwa Mosque (Shara, 2024).

Architectural Character of the Old Indrapurwa Mosque in the Nusantara Typological Perspective

Indrapurwa Mosque is one of the oldest mosques in Aceh. Mosques built in the early period of Islam typically exhibit distinctive Nusantara architectural characteristics, and Indrapurwa Mosque is no exception, having been built during the early spread of Islam, as seen in Figure 2. Sari describes the character and spatial arrangement of the Indrapuri Mosque complex as sharing patterns similar to those of Indrapurwa Mosque, making it a useful comparative reference — though the Indrapuri Mosque complex is larger than Indrapurwa Mosque [12]. The following is an analysis of the spatial and facade character of the old Indrapurwa Mosque.



Figure 2. Old Indrapurwa Mosque (before the 2004 tsunami).

The spatial arrangement of the Old Indrapurwa Mosque reflects a simple yet functional design that supports religious activities and daily worship. The mosque is organized around a square prayer space with structural columns, a designated imam and pulpit area, and supporting facilities such as ventilation openings, an ablution area, and a water source. Table 1 provides a detailed spatial analysis of these main elements, including their visual representation and functional descriptions.

Table 1. Spatial analysis of the Old Indrapurwa Mosque.

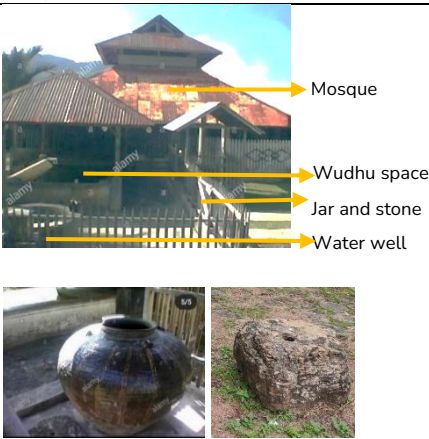
| Space | Image | Description |
|--------------------------|-------|--|
| Floor plan | | The mosque has a square floor plan of 81 m ² , with 16 columns. The spacing between columns is 3 m. There is a single entrance door, and at the front of the mosque, there is a designated area for the imam to stand and a pulpit (<i>mimbar</i>). |
| Pulpit Area | | The imam's standing area is marked in red, and the pulpit (<i>mimbar</i>) in yellow. The imam's standing space at the front is approximately one meter, with a small pulpit positioned to the side. |
| Lighting and Ventilation | | Lighting and ventilation in the mosque are provided by openings in the wooden-plank walls, allowing air and light to flow evenly throughout the space. |

| Space | Image | Description |
|---------------|-------|--|
| Mosque Layout | | <p>The layout pattern of the Indrapurwa Mosque includes an old well, an ablution area (kulah), and a jar and a perforated stone vessel filled with water (as evidenced by the remaining traces).</p> |

The facade of the Old Indrapurwa Mosque reflects a combination of traditional construction techniques and functional design adapted to the local environment. The building comprises three main visual elements: the base (pile), the mosque body, and the roof structure. Each element demonstrates the use of local materials and construction methods, contributing to both structural stability and environmental responsiveness. Table 2 presents a detailed facade analysis of these components, highlighting their physical characteristics, materials, and architectural functions.

Table 2. Facade analysis of the Old Indrapurwa Mosque.

| Facade | Image | Description |
|-------------|-------|--|
| Pile | | <p>The foot/base (pile) of the mosque is constructed of natural quarry stone, as seen in the image, with a foundation height estimated at 70 cm above ground level.</p> |
| Mosque Body | | <p>The body of the mosque follows the square spatial pattern. The wall material uses wooden planks on the sides and rear of the mosque. In contrast, the front uses narrow wooden slats (kayu kecil-kecil), allowing worshippers to see outside while admitting light and air into the mosque.</p> |
| Mosque Roof | | <p>The roof of Indrapurwa Mosque employs a double-tiered (tumpang) roof, with a gabled roof (atap pelana) at the apex. The roofing material is zinc sheeting. At the front of the mosque, there are two additional smaller roof structures: one over the ablution area/kulah (shown in blue) and one over the jar placement area (shown in red).</p> |

| Facade | Image | Description |
|------------------|---|---|
| Main Mosque Area |  | The layout pattern of the Indrapurwa Mosque includes an old well, an ablution area (kulah), and a jar and a perforated stone vessel filled with water (as evidenced by the remaining traces). |
| | Jar and stone | |

Based on the analysis and interviews with local community leaders, the authors have reconstructed the spatial form of the old Indrapurwa Mosque as it existed before the 2004 tsunami, as presented in Figure 3.

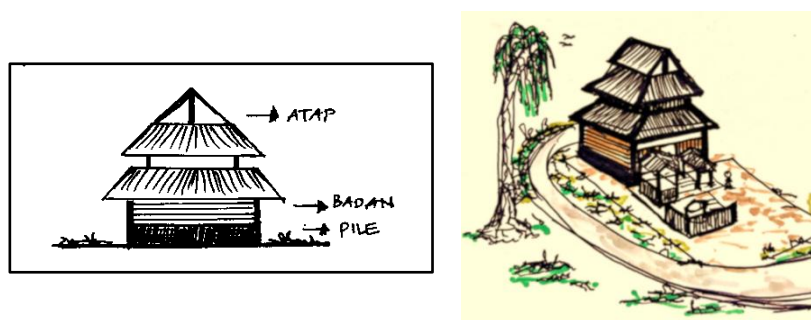


Figure 3. Spatial form of the old Indrapurwa Mosque (before the 2004 tsunami).

The findings in Figure 3 indicate that the old Indrapurwa Mosque shares a significant typological similarity with old mosques in Aceh and the Nusantara region: the square floor plan, tiered roof, and wooden column system are hallmarks of pre-colonial Nusantara mosques, also found in Demak Grand Mosque (Java), Katangka Mosque (Sulawesi), and Indrapuri Mosque in Aceh Besar. This similarity confirms that the Indrapurwa Mosque is an authentic representation of the Nusantara mosque architectural tradition on the west coast of Aceh, affirming its historical significance as cultural heritage. The reconstructed form (Figure 3) is based on the triangulation of three sources: archival photographs corroborated by informants, accounts from local community leaders, and typological references from comparable mosques, rather than on any single non-academic source.

Following the identification of the form and character of the old Indrapurwa Mosque, revitalization directives for the Indrapurwa Mosque complex were developed based on its historical character while incorporating contemporary elements to meet current needs.

The identification results indicate that the old Indrapurwa Mosque possesses architectural characteristics consistent with the typology of pre-colonial Nusantara mosques: a square floor plan, a wooden column structure, and a tiered roof. This typology reflects the adaptation of Islamic architecture to local traditions across Indonesia. In Southeast Asia, mosque design did not directly adopt the Middle Eastern dome form, but instead evolved through a vernacular approach shaped by regional cultural and environmental contexts [13,14].

The square floor plan with a column system (16 pillars) indicates a modular structural system commonly found in early Nusantara mosques, such as the Demak Grand Mosque and the

Indrapuri Mosque. According to Tjahjono [15], this system not only serves a structural function but also reflects spatial hierarchy and the zoning of worship areas.

Furthermore, the application of the double-tiered (*tumpang*) roof at Indrapurwa Mosque symbolizes verticality in local Islamic architecture, representing the relationship between humanity and God. This aligns with Sumalyo's [16] view that the tiered roof is a distinctive element that carries philosophical meaning and serves as a response to the tropical climate.

In terms of the facade, the use of wood and natural openings reflects a tropical architectural approach that prioritizes cross-ventilation and natural lighting. This concept is relevant to Amos Rapoport's theory [17], which emphasizes that cultural and environmental factors greatly influence architectural form.

It can thus be concluded that the character of the Indrapurwa Mosque is not merely a physical form, but represents a system of values, culture, and environmental adaptation that constitutes the identity of Nusantara Islamic architecture.

Character Reconstruction as the Basis for Revitalization

The reconstruction of the Indrapurwa Mosque's form was carried out through a data triangulation approach that combined visual documentation, interviews, and typological comparison. This approach is critical in maintaining the validity of interpretation, as argued by Denzin [11], who posited that triangulation enhances the credibility of qualitative research data.

The reconstruction results demonstrate that the main elements — floor plan, column structure, and site layout — are consistent with other old mosques in Aceh. This reinforces Indrapurwa Mosque's position within the network of historical Islamic architecture in the Aceh Lhee Sagoe area.

In the context of conservation, this approach aligns with ICOMOS principles, which emphasize the importance of understanding values before any design intervention [9]. The reconstruction thus functions not only as documentation, but also as a conceptual foundation for the revitalization design.

Revitalization as an Integration of Preservation and Contemporary Needs

The proposed revitalization concept is not solely oriented toward the preservation of physical form, but also toward the reinforcement of spatial function and meaning within a contemporary context. This is in line with Marco Danisworo's theory, which describes revitalization as an effort to revive an area while preserving its identity [7]. Furthermore, Shirvani [8] emphasizes that revitalization must take into account social aspects and user activities, so that designed spaces remain relevant to community needs.

In this study, such integration is reflected in: Memory lane as a medium for strengthening collective memory; Gallery as an educational space for historical learning; and the Zoning system that governs the relationship between public, private, and service spaces. This approach also aligns with the concept of adaptive reuse proposed by Plevoets [18], whereby historical buildings can be given new functions without losing their original identity.

As noted in the introduction, the Indrapurwa Mosque complex contains two mosque units (Figure 4). The conceptual revitalization directives for Indrapurwa Mosque incorporate elements of the old architectural character and combine them with contemporary concepts, featuring flexible spatial arrangements, simple forms, unobstructed sightlines, flexible spatial relationships, grid and linear circulation patterns, and ease of access to the entrance [19].

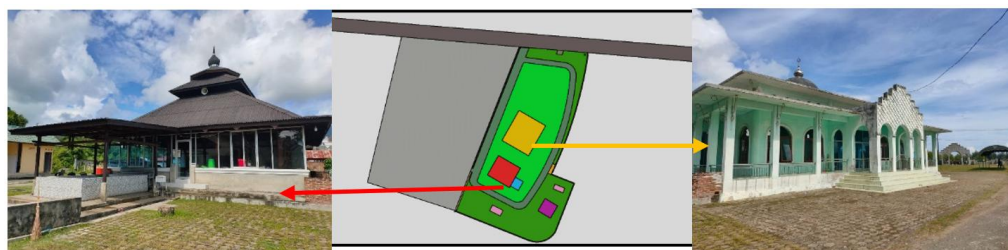


Figure 4. The two mosque units at Indapurwa Mosque (before the 2004 tsunami).

The following outlines the zoning plan. Zoning placement on the building site is required to position each building mass or other element within its designated zone. The zoning plan is based on current on-site conditions, in which land zones are disorganized and much of the land is not being properly utilized. The proposed zoning plan for the Indrapurwa Mosque complex is presented in Figure 5.

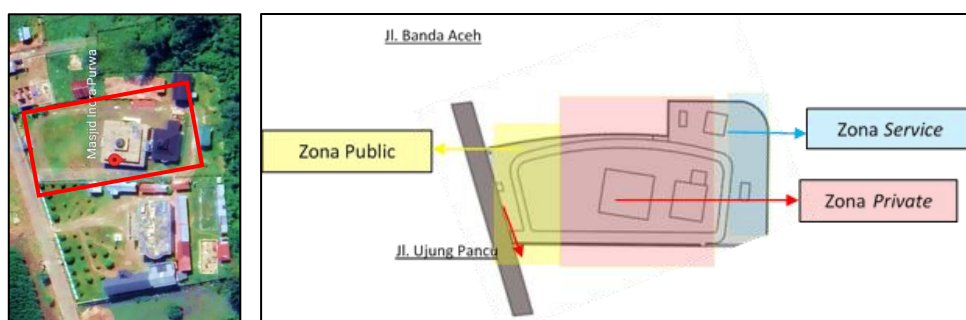


Figure 5. Zoning distribution of the Indrapurwa Mosque complex.

Figure 5 illustrates the zoning of the Indrapurwa Mosque complex, divided into three main zones: the Public Zone, the Private/Main Zone, and the Service Zone. Table 3 presents the placement of building masses and the elements to be revitalized within each zone.

Table 3. Zoning division.

| Zoning Division | Conceptual Revitalization Elements |
|---------------------|---|
| Public Zone | <ol style="list-style-type: none"> 1. Circulation road 2. Parking arrangement 3. Ablution area (well and kulah) 4. Evacuation route |
| Private / Main Zone | <ol style="list-style-type: none"> 1. Indrapurwa Mosque (replica mosque and domed mosque), including mosque connector 2. Memory lane 3. Courtyard / open field 4. Green area 5. Ablution area (well and kulah) 6. Gallery and rest area |
| Service Zone | <ol style="list-style-type: none"> 1. Toilets (male and female) 2. Open green space 3. Road/circulation 4. Service parking |

The following details the conceptual layout. The layout plan was developed to position each building mass in its appropriate location. The basis for the layout plan stems from the current disorganized arrangement of the Indrapurwa Mosque complex, where the spatial patterns of the complex and its elements do not meet adequate standards, and where additional building masses are needed to enhance the complex's overall value.

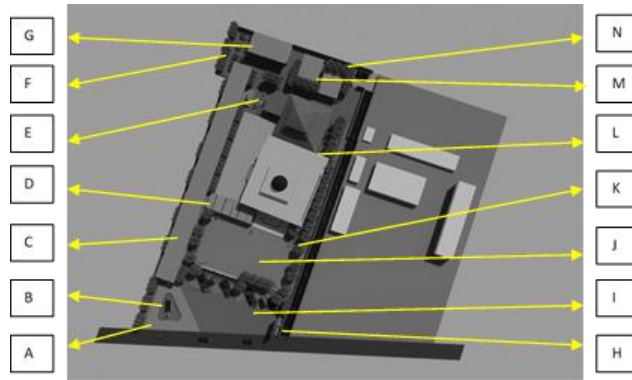


Figure 6. Layout plan of the Indrapurwa Mosque complex

Figure 6 illustrates the redesigned spatial arrangement of the Indrapurwa Mosque complex. Each building mass unit and supporting element is labeled with a letter: A (entrance circulation), B (front abluton area), C (memory lane hallway/corridor of remembrance), D (pergola), E (ablution area for the replica Indrapurwa Mosque), F (rest area), G (gallery), H (circulation and evacuation route), I (parking), J (open field/courtyard), K (open green space), L (two mosque units and the mosque connector), M (toilets), N (service area parking). The placement of each building unit within the complex is based on the patterns of daily community activity and visitor flow.

The entrance circulation is designed to guide visitors into and through the Indrapurwa Mosque complex, with particular emphasis on the replica Indrapurwa Mosque. This circulation is designed based on the character of the old Indrapurwa Mosque and contemporary context, drawing on Miesian modern architectural values: unobstructed sightlines, space as a program, and hierarchical patterns [19], along with the use of line, plane, and volume elements [20]. The conceptual design of the entrance circulation is shown in Figure 7.

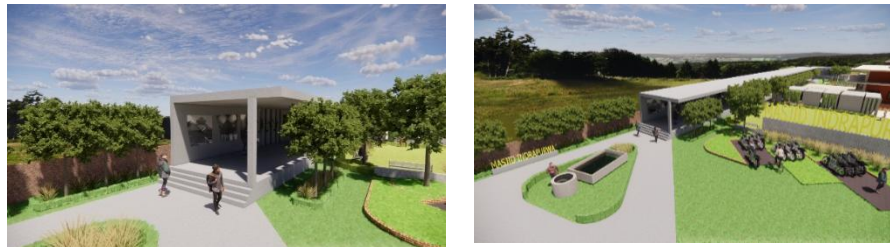


Figure 7. Entrance circulation.

The abluton area is placed at the front of the Indrapurwa Mosque complex, mirroring the layout of the old Indrapurwa Mosque. By restoring this placement, the original character of the old mosque is recalled, and worshippers can experience the atmosphere of the old Indrapurwa Mosque. In addition to its abluton function, this area can also be used for washing feet. The design of the front abluton area is shown in Figure 8.

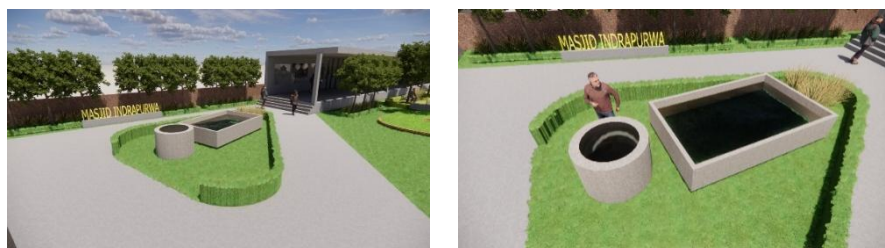


Figure 8. Front abluton area.

The memory lane (corridor of remembrance) is one approach to restoring memories of the Indrapurwa Mosque. This corridor is designed and positioned from the complex entrance to the replica Indrapurwa Mosque. On the corridor walls, images and paintings of the old Indrapurwa Mosque are displayed, allowing visitors entering the complex to experience the atmosphere of the old mosque. The design concept of the memory lane follows the character of the old Indrapurwa Mosque, which used narrow wooden slats (*kayu kecil-kecil*) to admit light and air into the space. Accordingly, portions of the memory lane hallway walls are perforated to allow natural light to enter. The application of modern Miesian principles includes: flexible spatial relationships, grid and linear circulation patterns, and ease of access to the entrance [19]. Displayed in Figure 9.



Figure 9. Memory lane.

The pergola functions as a shading element and is positioned in front of the domed Indrapurwa Mosque. The rationale for this placement is that visitors wishing to enter the domed Indrapurwa Mosque can pass through the pergola. This pergola is connected to the *memory lane*: visitors who wish to view the replica Indrapurwa Mosque continue along the *memory lane*, while those wishing to enter the domed Indrapurwa Mosque pass through the pergola. The pergola applies elements of modern architecture, namely the use of sun shading [21] and space as a program [19]. The pergola design for the Indrapurwa Mosque complex is shown in Figure 10.



Figure 10. Pergola.

In front of the replica Indrapurwa Mosque, the original elements and character of the old mosque are preserved: the well and ablution area (*kulah*) are retained in their positions. Although an additional ablution area has been added at the front of the complex, the *kulah* and well in front of the replica mosque are maintained in their existing form. The design of the ablution area in front of the replica Indrapurwa Mosque is shown in Figure 11.



Figure 11. Ablution area in front of the replica Indrapurwa Mosque.

The rest area is one of the supporting elements within the mosque complex; its presence enhances visitor comfort and provides a space for relaxation. The rest area in the Indrapurwa

Mosque complex is located in the complex's landscape, not inside a building. The modern architectural concept is based on unobstructed sightlines, a hallmark of Mies van der Rohe [19], and the use of a grid system [20]. The rest area design for the Indrapurwa Mosque complex is shown in Figure 12.



Figure 12. Rest area.

The gallery is one of the key supporting elements within the mosque complex and becomes especially important in a historically significant one. Similarly, for the Indrapurwa Mosque, a gallery is necessary to house historical records, including archives, books, journals, photographs, paintings, and other materials related to the Mosque and the surrounding area. The gallery design applies modern architectural concepts, including simple forms and easy access to the entrance [19]. The gallery design for the Indrapurwa Mosque is shown in Figure 13.



Figure 13. Gallery.

Circulation is a critical element for movement between buildings within the mosque complex. Within the complex, circulation is divided into two categories: pedestrian and vehicular (two-wheeled and four-wheeled). Pedestrian circulation is via the *memory lane*, while vehicular circulation is limited to a single access point designated for complex administrators and the service area. Evacuation routes are planned for the Indrapurwa Mosque complex in response to earthquake and tsunami hazards, given the area's vulnerability to these disasters. As stated by Wulandari [22], elements of safety and resilience constitute important aspects and fundamental human needs, indicating that revitalization planning must incorporate safety and resilience to produce a mosque complex that is responsive to earthquake and tsunami hazards. The circulation and evacuation route concept is shown in Figure 14.

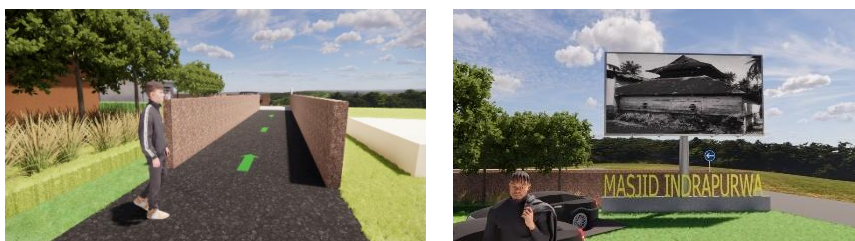


Figure 14. Circulation and evacuation routes.

The Indrapurwa Mosque complex still requires a reorganization of its parking area. The complex currently lacks dedicated parking for four-wheeled vehicles, and motorcycle parking is also insufficient. A new parking arrangement is therefore proposed, positioned at the front of the mosque complex to facilitate visitor access to parking and entry into the complex. The parking

layout concept for the Indrapurwa Mosque complex is shown in Figure 15.



Figure 15. Parking area.

An open courtyard or field is urgently needed within this mosque complex, primarily because the local community regularly uses such spaces for Islamic activities, including the *Maulid* (Prophet's Birthday) celebration. Therefore, the central open field is retained in the revitalization plan to be properly utilized for important community events. The courtyard layout concept for the Indrapurwa Mosque is shown in Figure 16.



Figure 16. Courtyard / open field.

The open green space is designated as a shaded area for visitors. The rationale for this is that the mosque complex can become quite hot during the day, and the green space will provide visitors with shade while allowing them to enjoy the beauty of the Indrapurwa Mosque complex and its surrounding natural scenery. The open green space concept for the Indrapurwa Mosque complex is shown in Figure 17.



Figure 17. Open green space

The two main mosque buildings — the domed mosque and the replica mosque — will not undergo structural changes, except for the addition of a connector between them. The rationale for the connector is to join the two mosques so that worshippers are not exposed to rain when moving between them. Currently, there is no covered walkway between the two structures, leaving users exposed to rain during the rainy season. The connector is designed in accordance with modern architectural values, specifically the use of sun shading [21]. The inter-mosque connector design is shown in Figure 18.



Figure 18. Inter-mosque connector.

The toilets have been redesigned with full enclosure for greater privacy and modesty, and also include an ablution area inside. The application of modern architectural elements in the design emphasizes simplicity of form [19]. The male and female toilets are separated by distinct entrances, so that although the facilities are in close proximity, male and female users will not cross paths because of the separate access routes. The toilet design for the mosque complex is shown in Figure 19.



Figure 19. Toilets.

The service area parking is designated for mosque administrators and service needs. The rationale for this is to facilitate mosque administration, provide access to clean water, and maintain wastewater installations. Additionally, this service area includes a rear gate as an evacuation route in the event of a tsunami, designed to minimize harm from earthquakes and tsunamis. The service area parking concept for the rear section of the Indrapurwa Mosque complex is shown in Figure 20.



Figure 20. Service area parking.

Based on the discussion of revitalization and its various complex elements, it can be seen that the revitalization directives are oriented toward meeting user needs to achieve the revitalization goal of developing and revitalizing the Indrapurwa Mosque complex, both in the present and in the future. The overall revitalization concept for the Indrapurwa Mosque complex is summarized in the site plan and a three-dimensional perspective, as shown in Figure 21.



Figure 21. Site plan and complex perspective.

Based on all of the foregoing, it can be synthesized that every proposed revitalization design decision has a direct correspondence with the architectural character of the identified old Indrapurwa Mosque: (a) the placement of the ablution area at the front replicates the original site layout; (b) the use of perforated narrow wooden slats (*kayu kecil-kecil*) in the memory lane references the natural lighting system of the old mosque's walls; (c) the pergola and connector roofs adapt the tiered (*tumpang*) roof principle in a contemporary architectural language; and (d) the history gallery strengthens the continuity of collective memory severed by the 2004 tsunami. These findings contribute to the understanding that effective revitalization of historic mosques need not choose between preserving authenticity and fulfilling contemporary needs — both can be integrated through a systematic morphological comparative approach and character-based conceptual design. This approach can serve as a model for revitalizing other historic mosques in the Aceh Lhee Sagoe area and other coastal Nusantara regions with comparable contexts.

Character Transformation into Design Elements

Each design element in the revitalization concept demonstrates a direct correspondence with the old architectural character, as follows: the Front Ablution Area replicates the original site layout; the Memory Lane represents a reinterpretation of the perforated *kayu kecil-kecil* (narrow wooden slats) walls; the Pergola and Connector embody a transformation of the *tumpang* (tiered) roof principle; and the Gallery reinforces historical continuity. This approach demonstrates that revitalization is not carried out merely symbolically, but through a systematic process of character transformation.

In the context of contemporary architecture, this approach also adopts functional principles from van der Rohe [23], such as spatial flexibility and simplicity of form, while remaining contextualized within local values. Accordingly, the resulting revitalization represents a dialogue between tradition and modernity, rather than a replacement of identity.

Theoretical and Practical Implications

Theoretically, this study demonstrates that an architectural character-based approach can effectively revitalize historic buildings, bridging the gap between historical documentation and design implementation. In practice, the generated concept can serve as a model for revitalizing other historic mosques in Aceh and across the Nusantara region that share similar architectural characteristics.

Conclusions

This study demonstrates that the Indrapurwa Mosque embodies an architectural character that is strongly representative of the pre-colonial Nusantara mosque typology. This is reflected in its square floor plan, column-based structural system, use of timber, and distinctive tiered (*tumpang*) roof form. These elements are not merely physical attributes, but also encapsulate deeper cultural meanings, environmental adaptations, and expressions of local religious

practices. The mosque thus represents a holistic architectural system in which form, function, and belief are closely intertwined.

Through a combination of morphological analysis and typological comparison, this research successfully reconstructs the architectural character of the original Indrapurwa Mosque, providing a solid foundation for formulating a revitalization concept. The findings indicate that a character-based revitalization approach can preserve the continuity of architectural identity while responding to contemporary spatial, functional, and social demands. This confirms that historical architecture can remain relevant when its essential values are carefully interpreted and recontextualized.

The proposed revitalization concept integrates preservation and development by translating the mosque's architectural character into the design of the broader complex. This includes the incorporation of elements such as a memory lane, interpretive gallery, spatial zoning system, and supporting facilities, all of which are designed to reinforce historical awareness while enhancing usability. This approach illustrates that conservation and innovation are not mutually exclusive, but can coexist in a balanced manner that safeguards authenticity while enabling adaptive transformation.

From a scientific perspective, this study advances architectural revitalization methodologies by emphasizing a character-based approach grounded in historical analysis. It also enriches the discourse on Nusantara mosque architecture by framing it as a dynamic, context-responsive system rather than a static historical artifact. From a practical standpoint, the outcomes of this research provide a valuable reference for architects, planners, and policymakers involved in the preservation and development of historic religious buildings in Indonesia, particularly to ensure that revitalization efforts remain sensitive to cultural identity, historical significance, and contemporary needs.

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References

- [1] Shara S, Wulandari E, Djamaluddin M. Analysis of the location and architectural value of Indrapurwa mosque, 2024, p. 030021. <https://doi.org/10.1063/5.0201199>.
- [2] McKinnon EE. Aceh's Defences. *Indonesia and the Malay World* 2009;37:345–73. <https://doi.org/10.1080/13639810903269334>.
- [3] Bakri M. Sustainable Architecture Implementation of Vernacular Mosque in Aceh, Indonesia. *Journal of Islamic Architecture* 2018;5:83–95. <https://doi.org/10.18860/jia.v5i2.4812>.
- [4] Sari LH, Wulandari E, Idris Y. An Investigation of the Sustainability of Old Traditional Mosque Architecture: Case Study of Three Mosques in Gayo Highland, Aceh, Indonesia. *Journal of Asian Architecture and Building Engineering* 2024;23:528–41. <https://doi.org/10.1080/13467581.2023.2245006>.
- [5] Hasjmy A. *Kebudayaan Aceh dalam Sejarah*. Jakarta: Penerbit Beuna; 1983.
- [6] Lombard D. *Kerajaan Aceh: Zaman Sultan Iskandar Muda (1607–1636)*. Jakarta: Balai Pustaka; 1991.
- [7] Danisworo M. *Revitalisasi Kawasan Kota*. Jakarta: 1996.
- [8] Shirvani H. *The Urban Design Process*. Van Nostrand Reinhold; 1985.
- [9] International Council on Monuments and Sites. *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*. Australia: ICOMOS; 2013.

- [10] Creswell JW. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE Publications; 2014.
- [11] Denzin NK. *The Research Act: A Theoretical Introduction to Sociological Methods*. McGraw-Hill; 1978.
- [12] Sari LH. *Dokumentasi Desain Masjid Indrapuri dan Tengku Dipucok Krueng sebagai Langkah Konservasi Bangunan Masjid Bersejarah Aceh*. Syiah Kuala University Press; 2019.
- [13] Frishman M, Khan HU. *The Mosque: History, Architectural Development and Regional Diversity*. Thames & Hudson; 1994.
- [14] Lewcock R. *Arabia*. In: Michell G, editor. *Archit. Islam. World Its Hist. Soc. Mean.*, London: Thames & Hudson; 1978.
- [15] Tjahjono G. *Indonesian Heritage Architecture*. Archipelago Press; 1998.
- [16] Sumalyo Y. *Arsitektur Kolonial Belanda di Indonesia*. Gajah Mada University Press; 2000.
- [17] Rapoport A. *House Form and Culture*. Prentice-Hall; 1969.
- [18] Plevoets B, Van Cleempoel K. Adaptive Reuse as a Strategy Towards Conservation of Cultural Heritage: A Literature Review. *Struct. Stud. Repairs Maint. Herit. Archit.*, vol. 118, 2011, p. 155–64. <https://doi.org/10.2495/STR110131>.
- [19] Darmawan I, Nuryanti W. *Mies Van Der Rohe (Prinsip-Prinsip Perancangan Arsitektur Pada Karya-Karyanya)*. Universitas Gadjah Mada, 2011.
- [20] Tri Wicaksono MRT. Kajian Arsitektur Modern Pada Prasarana Sekolah Keberbakatan Olahraga (SKO). *Jurnal Arsitektur ZONASI* 2020;3:252–60. <https://doi.org/10.17509/jaz.v3i2.24683>.
- [21] Brunner T, Latifah NL. Kajian Penerapan Arsitektur Modern Pada Bangunan Roger's Salon, Clinic, Spa and Wellness Center Bandung. *Jurnal Teknik Arsitektur Itenas* 2019;1:1–5.
- [22] Wulandari E, Zahriah Z, Fuady Z, Sabila F. Regulatory Function of Spatial Structure on Ujung Pancu Area, Aceh. *IOP Conference Series: Earth and Environmental Science* 2021;881:012063. <https://doi.org/10.1088/1755-1315/881/1/012063>.
- [23] Mies van der Rohe L. *Weissenhofsiedlung Housing Exhibition 1927*.