



Research Paper

Received: 26 May 2025, Accepted: 26 August 2025, Published online: 31 October 2025

DOI: 10.21625/archive-sr.v9i4.1215

Architectural Heritage and Universal Accessibility: Integrating Inclusive Design in Historic Buildings and Patrimonial Environments

Rana Hatmal, PhD¹¹ *Visiting Professor of Architecture, Arab International University (AIU), Syria*¹ *Doctoral Researcher (Interdisciplinary PhD in Semiotic Studies), University of Quebec in Montreal, Canada*

Abstract

Historic buildings and patrimonial environments often offer noteworthy challenges regarding accessibility for individuals with disabilities, predominantly for those using wheelchairs or with visual impairments. These sites, while rich in cultural and architectural value, commonly lack the essential accommodations to guarantee inclusivity for all users. The physical spaces of these environments are often incompatible with the needs of contemporary accessibility, creating barriers that prevent comprehensive participation by people with diverse abilities.

To preserve and enhance the cultural and historical implications of these buildings and monuments, it is decisive to approach renovation and restoration projects with a focus on universal accessibility. This process involves not only meeting up-to-date accessibility standards but also ensuring that the interventions respect and maintain the historical and architectural identities of these milieus. The fundamental question this article addresses is whether it is possible to reconcile the need for universal design with the preservation of the unique characteristics that define these historic sites.

Through an identification and analysis of universal accessibility requirements, and by presenting carefully chosen examples, this article aims to explore how historic buildings and patrimonial sites can be adapted to be universally accessible while keeping their architectural heritage and formal identity. The discussion highlights the chosen approach for incorporating accessibility within the framework of Historic Buildings and Patrimonial Environments.

The research constitutes a working agenda designed to identify the essential needs that cannot be disregarded or substituted for rehabilitating historic buildings and patrimonial sites and making them universally accessible. It also outlines the appropriate approach to the style of architectural interventions and the design of added architectural elements, based on the vision of the researcher.

© 2025 The Authors. Published by IEREK Press. This is an open-access article under the CC BY license (<https://creativecommons.org/licenses/by/4.0/>). Peer review under the responsibility of ARChive-SR's International Scientific Committee of Reviewers.

Keywords

Accessibility, Universal Accessibility, Architectural Heritage, Historic Buildings, Patrimonial Environments, Patrimonial Sites, Inclusive Design.

1. Introduction

The purpose of this article is to present a perspective regarding the rehabilitation of patrimonial buildings and sites, aiming to introduce universal accessibility without altering their identity and formal characteristics within acceptable limits, according to the vision of the researcher.

The theoretical section will highlight, define, and demonstrate the importance of universal accessibility with a precise attention to addressing the needs of people with different limitations, including mobility restrictions, low vision, hearing deficiencies, and neurodivergent conditions (Mental Health Hotline, n.d.), while respecting the features and historical value of these sites and buildings. The practical part will examine chosen examples of patrimonial buildings and sites that have been rehabilitated to be universally accessible and inclusive.

This analysis necessitates defining the concepts of accessibility and inclusion in the built environment and their integration into the context of historical sites and buildings. The approaches to rehabilitating patrimonial built environments will be analyzed through selected examples, with the aim of establishing the findings of the article presented.

The offered perspective establishes the researcher's vision regarding the connection between heritage preservation with universal accessibility, contemporary criteria. It's about responding, on one hand, to contemporary spatial requirements and intervention methods to integrate universal accessibility criteria, while, on the other hand, preserving the identity of the architectural form related to these patrimonial places.

2. Definitions of Universal Design and Patrimonial Buildings and Sites

2.1. Universal Design

Universal Design means that the products which designers produce are universally accommodating (Goldsmith, 2000, p. 1), that they provide conveniently for all their users.

The Center for Universal Design defines universal design as follows:

"Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design." (Aslaksen, Bergh, Bringa, & Heggem, 1997).

2.2. Patrimonial Buildings and Sites

Heritage can be understood as a “past–present”, a continuum that exists within our contemporary world, privileging the quality or antiquity of human works (Rautenberg, 2024, p. 13).

In academic literature, the term patrimonial refers to the governance, protection, and transmission of cultural assets forming part of a community’s inherited legacy. These assets include both tangible and intangible elements that shape collective identity and require specialized approaches for their conservation and safeguarding (Rautenberg, 2024, pp. 15–20).

Under the Cultural Heritage Act (Loi sur le patrimoine culturel – LPC), immovable cultural heritage is classified into two main categories: patrimonial buildings and patrimonial sites. A patrimonial building is defined as “any immovable property presenting interest for its archaeological, architectural, artistic, emblematic, ethnological, historical, landscape, scientific, social, urbanistic, or technological value, including a building [...]” (LPC, art. 2). Likewise, a patrimonial site is defined as “a place or a group of immovables [...] presenting interest for its archaeological, architectural, artistic [...] value” (LPC, art. 2). An example of a patrimonial site could be an archaeological location (Government of Quebec, 2023).

Lexicographic sources describe a patrimonial building as “an edifice considered a model representative of a past style or way of life, recognized as such by the community” (Office québécois de la langue française, 2025).

For this paper, the adapted definition of patrimonial buildings and sites refers to ensembles of built environments that represent past periods and are valued for their archaeological, architectural, artistic, or historical significance. Such

assets are protected under specific legal frameworks, such as the Cultural Heritage Act (LPC), to ensure their conservation and safeguarding for future generations.

3. Integrating Universal Accessibility into Historic Buildings and Patrimonial Environments

Universal design in the built environment, urban design, and architecture aims to develop theories, principles, and solutions that enable all individuals to use the same physical spaces to the greatest extent possible. This approach applies to both indoor and outdoor environments, regardless of whether these spaces were originally designed for people with disabilities or other population groups. The core principles of universal design emphasize equal status, equal treatment, and universal accessibility for all users.

In the context of historic buildings, ensuring accessibility is essential for promoting an inclusive society. These sites hold significant cultural, social, and economic values, reflecting the identity and heritage of past societies. It is therefore necessary to make all heritage facilities, regardless of their location, accessible to all individuals, including persons with disabilities.

However, physical barriers can restrict access for certain individuals, consequently limiting their participation in cultural and everyday activities. Enhancing accessibility sensitively and appropriately not only raises awareness and appreciation of built heritage but also stabilizes the need for heritage conservation with the imperative of equal access for all.

To achieve this balance, stakeholders responsible for historic properties must guarantee the highest level of accessibility possible without compromising or altering key features and materials that define the historical significance of the site (U.S. Department of the Interior, 1992).

4. The considerations of essential accessibility for different user groups and their potential applications in historic buildings and patrimonial environments

The principles of universal design were developed by the Center for Universal Design at North Carolina State University, USA, in order to clarify the concept of "design for all," which is largely synonymous with universal design. These principles intend to create inclusive environments that accommodate individuals of all ages, sizes, and abilities, including children, older adults, and both disabled and non-disabled individuals.

To embody these principles, the Center for Universal Design established seven fundamental principles (North Carolina State University, 1995). These principles serve as essential guidelines for designers in establishing accessibility criteria for the built environment.:

1. Equitable Use
2. Flexibility in Use
3. Simple and Intuitive Use
4. Perceptible Information
5. Tolerance for Error
6. Low Physical Effort
7. Size and Space for Approach and Use

In general, the needs of people with different disabilities can be categorized into four main groups: motor disabilities (including wheelchair users), neurodivergence, visual impairment, and hearing impairment. The needs of these groups must be taken into consideration when ensuring universal accessibility in historic buildings. However, due to the necessity of preserving heritage features, some accessibility measures may not be fully implemented, thereby minimizing the footprint of any probable interventions (Jester & Park, 2004).

In all cases, any interventions, additions, or modifications aimed at ensuring accessibility must be cautiously evaluated, considering the sensitive nature of historic buildings and sites. This involves identifying essential needs

that cannot be overlooked and determining the most appropriate way to address them, which will be discussed later. Simultaneously, it is crucial to identify interventions or elements that can be replaced with alternative solutions that do not require significant alterations to the existing built environment. The goal is to achieve the highest possible level of accessibility while still respecting the sensitive nature of historic structures.

It is important to plan the necessary level of intervention, if any, to ensure universal accessibility. Consideration should also be given to whether the proposed solution should be temporary or permanent. These decisions must be made within the context of an overall accessibility strategy for the built environment. In all scenarios proposed, it is advisable to consult with existing users with disabilities, disability organizations, and relevant local authorities before finalizing an approach. (National Disability Authority, 2011).

This evaluation process leads to the classification of the needs and requirements for integrating universal accessibility into two categories:

- Requirements that can be addressed through alternative solutions that do not involve architectural or landscape modifications.
- Critical requirements that need to be addressed and that necessitate architectural interventions or landscape modifications.

This classification reflects the researcher's perspective and serves as the basis for the subsequent sections of this article.

However, it is important to clarify that the article does not focus on identifying the level of accessibility in historic buildings but rather emphasizes how their identity can be preserved while integrating the principles of universal design.

4.1. Motor Disabilities (Including Wheelchair Users)

- Accessible outdoor pathways leading to building entrances (The Americans with Disabilities Act (ADA), 1990 -2005).
- Designated transport drop-off areas connected to accessible routes.
- Step-free access or ramps with appropriate slopes.
- Accessible entrances.
- Vertical circulation through elevators.
- Universal toilet facilities.

4.1.1. Critical Requirements for Motor Disabilities Individuals:

The needs of individuals with limited mobility, including wheelchair users, must not be ignored when considering the accessibility of historic buildings. These requirements are critical as they often necessitate architectural interventions such as ramps and elevators. Additionally, modifications to interior layouts may be required, particularly when incorporating accessible toilets with adequate space and specifications.

4.2. Neurodivergent Individuals

- Availability of quiet rooms or sensory refuges in historic buildings.
- Use of calming colors (e.g., blue tones) while avoiding highly stimulating colors like red and bright orange-red (Mostafa, 2021, p. 59 – 103).
- Presence of trained personnel to assist individuals with Autism Spectrum Disorders (ASD) in cases of sensory overload.

- Adequate lighting, avoiding fluorescent lamps or other glaring light sources, with dimmable lighting devices to control illuminance levels.

4.2.1. Requirements for Neurodivergent Individuals:

In practice, the possibility of integrating a space to accommodate potential sensory overload episodes for neurodivergent individuals may be restricted due to the challenges of integrating quiet rooms within patrimonial buildings. In such cases, the presence of trained staff to assist visitors in distress could serve as an alternative solution.

Moreover, the use of calming, non-saturated colors — such as light blue or green — may be difficult to implement so as to respect the historical character of the site and minimize alterations. Therefore, the application of non-stimulating colors could be limited to signage and informational panels, in order to preserve the visual identity of the place.

4.3. Visual Impairment

- Use of color contrast for better orientation and wayfinding.
- Clear warnings through the addition of podotactile plaques for level changes.
- Availability of staff to provide orientation assistance.
- Accessible signage, including Braille, tactile, and auditory features.
- Adequate lighting with minimal glare. (Toronto Accessibility Design Guidelines. (2021))

4.4. Hearing Impairment

- Use of sound-absorbing materials to minimize sound reverberations (David, 2008; British Standards Institution, 2021).
- Visual representation of auditory signals.
- Provision of hearing aid devices.
- Availability of staff trained in sign language. (Veterans Affairs Canada, 2019)

4.4.1. Requirements for individuals with Visual and Hearing Impairment:

To address the needs of individuals with visual and auditory deficiencies, it could be argued that accommodating individuals with visual impairments may require altering the color schemes used in patrimonial buildings and sites. However, such an approach is discouraged, as it compromises the visual identity and heritage value of the site.

In this context, technology plays a vital role. Mobile applications can support wayfinding both within and around the site, without necessitating any physical modifications. An example is the BlindSquare application, which provides wayfinding information through pre-programmed beacons, offering an alternative to traditional tactile signage.

Regarding acoustic considerations, Historic Buildings and Patrimonial Environments often feature architectural designs that naturally isolate interior spaces from ambient noise. A notable example is the clear audibility of speakers in historic churches, where architectural form and materiality support concentrated sound and minimize reverberation.

Furthermore, audio messages used for conveying information should be complemented by visual signage, and vice versa, ensuring accessibility across different sensory modalities. This redundant communication system enhances inclusivity while well-preserving the existing architectural features and styles.

5. Intervention Features and Characteristics for Historic Buildings and Patrimonial Environments: Selected Examples

After identifying architectural or landscape interventions that are critical—meaning they necessitate significant modifications—the following elements must be considered: external or internal changes to address level differences

through the integration of ramps and elevators, and modifications to accommodate accessible toilets, which often require architectural modifications, interventions, or the addition of new architectural elements. These interventions primarily address the needs of individuals with motor disabilities, including wheelchair users (see Paragraph 4.1.1. Critical Requirements for Motor Disabilities Individuals).

Returning to the core research question—how can accessible elements be integrated without compromising the formal identity of historic buildings and sites? —A key aspect to highlight is the commonly adopted approaches for ensuring universal accessibility.

The first is a consistent approach, in which the architectural features of adapted areas—or newly added architectural elements—remain harmonious with the formal identity of the historic site and patrimonial buildings. The second is a contrasting approach, where interventions are deliberately designed to stand out from the architectural style or original historical character of the building or site.

In both cases, the goal is to provide a broad perspective through concrete examples that reflect the diversity of contexts and countries represented. The selected examples illustrate these two main approaches to improving accessibility, representing sites from across the world and spanning a wide range of historical periods.

As discussed earlier, critical interventions in the context of historic buildings and patrimonial sites refer to modifications specifically intended to address the needs of people with motor disabilities, particularly wheelchair users. These needs are considered the most critical (compared to those of the other three user groups) because they often require substantial architectural interventions and the addition of new elements. Therefore, the examples presented for both approaches demonstrate architectural solutions designed specifically to meet this user group's needs.

In contrast, accessibility requirements for people with visual impairments, hearing loss, or neurodivergent individuals may not require significant architectural modifications. For example, at the Palace of Versailles, reception counters are equipped with induction loops to assist visitors with hearing difficulties, and trained staff are continuously available to provide support for neurodivergent visitors when needed (Palace of Versailles, n.d). Similarly, at the Smithsonian Institution—the world's largest museum complex—technological solutions have been implemented to assist visitors with visual impairments, such as the Aira Access mobile information and verbal description service, which connects users to an Aira agent who provides real-time guidance and information during their visit (Smithsonian Institution, n.d.).

In both cases, the interventions are not considered critical because they do not involve spatial alterations, architectural interventions, or modifications to the spatial character of historic buildings and patrimonial sites. This distinction explains why the examples that follow focus on interventions where the architectural character and style of the modifications play a central role in improving accessibility within historic buildings and patrimonial environments.

5.1. Intervention Features / Characteristics that Match the Historic Built Style

The first approach to integrating universal accessibility emphasizes the necessity of adding invisible, removable, or temporary elements to ensure that interventions remain reversible whenever needed (National Disability Authority, 2011, p. 18). If permanent solutions are required, the design should ensure compatibility with the existing built environment.

This approach advocates for matching or imitating the original style, colors, and themes or designing elements that remain sympathetic to the historic environment. According to this perspective, any added elements—such as ramps, elevators, platforms, and directional signs —should replicate the existing architectural style and harmonize with it (Standards and Guidelines for the Conservation of Historic Places in Canada, 2003, p.161), ensuring visual coherence with the surrounding environment.

5.1. 1. Examples of Universal Accessibility Integration with Consistent Intervention Features

Below are selected examples where elements of universal accessibility have been integrated in ways that either harmonize with or intentionally contrast against the historic fabric of the site.

- **The Hugh Lane Gallery was founded in 1908 in Dublin, Ireland.**

The Hugh Lane Gallery, Dublin's first public gallery of modern art, was founded in 1908 and remains one of the city's most significant cultural institutions (Hugh Lane Gallery, n.d.). In 2006, a ramp was installed at the side of the principal entrance podium to enhance accessibility (National Disability Authority, 2011, p. 83). The materials, colors, and style of the ramp were designed in complete harmony with the original architectural style. (Figure 1).



Figure 1 – Adding a ramp to make the entrance accessible. The Hugh Lane Gallery (Source: <https://hughlane.ie/accessibility-2/>)

- **The Collegio Cairoli, Historic Student Accommodation in Pavia, Italy (1948)**

Collegio Cairoli is a historic student residence in Pavia, offering accommodation, facilities, and cultural activities. It houses 95 single rooms with shared bathrooms and provides a library, dining hall, study rooms, and recreational spaces. In 2015, a lifting platform was installed to provide access to the first floor (Elevatori Magazine, n.d.), matching the colors and style of the existing entrance materials. A temporary ramp was also introduced to provide access to the entrance level. (Figure 2)



Figure 2 – Architectural intervention to add a lifting platform with a temporary ramp. The Collegio Cairoli (Elevatori Magazine, n.d.)

• **Province House Historic Site in Charlottetown, Canada (Built in 1847)**




Province House has been the seat of Prince Edward Island’s Legislative Assembly since 1847 and is Canada’s second-oldest active legislative building. Built in the Neo-Classical style (Parks Canada, n.d). It underwent accessibility improvements in 2012, including landscape assessment and rehabilitation. Light slopes were introduced to address grade changes, respecting the building’s original approach (Standards and Guidelines for the Conservation of Historic Places in Canada, 2003, p. 71). (Figure 3)



Figure 3 – New paths with light slopes to resolve level differences. Parks Canada Source (<https://parks.canada.ca/lhn-nhs/pe/provincehouse>)

The following table, Table 1, summarizes the provided examples, highlighting historical sites and patrimonial buildings where added accessibility elements are consistent with both the historic sites and the original architectural style.

Table 1: Examples of matching interventions to integrate universal accessibility. (Source: Author)

Photo	Historic Site / Building	Place	Period	Accessibility Intervention	Year of Intervention
	The Hugh Lane Gallery	Dublin, Ireland	1908	Ramp With matching materials and colors	2006
	the Collegio Cairoli	Pavia, Italy	1948	Lifting platform with consistent colours and materials Temporary ramp	2015
	Province House Historic Site	Charlottetown, Canada	1847	Rehabilitation with light slopes respecting the original building approach	2012

5.2. Intervention Features/Characteristics that Contrast with the Historic Built Style

Rather than imitating historical elements, this approach familiarizes accessibility features as contemporary additions that contrast with the historic built environment, both externally and internally.

Accessibility interventions—such as ramps, bollards, and architectural modifications for accessible washrooms—should be designed in a contemporary style that contrasts with the architectural language and characteristics of the existing built environment. This deliberate contrast ensures a clear distinction between new and historic elements.

Note: It is important to distinguish between new additions and replacements. Damaged or deteriorated elements should be replaced or restored using identical materials and methods, following the same principles applied in the restoration of patrimonial sites and buildings.

5.2.1. Examples of Integrating Universal Accessibility with Contrasting Intervention Features

Below are some examples where elements of universal accessibility have been integrated in a way that contrasts with the historic built style.

- **The Acropolis Museum and Site, Athens, Greece (Accessibility Intervention in 2020)**

The Acropolis of Athens, a UNESCO World Heritage site, is an ancient citadel that served as a religious, political, and cultural center of ancient Greece since the 6th century BC. In 2020, a panoramic elevator was installed to provide free wheelchair access to the summit ([disabledaccessibletravel.com](https://www.disabledaccessibletravel.com)). Its contemporary design, colors, and materials create a deliberate contrast with the historic built environment. Figure 4 (a), (b).



Figure 4a: Panoramic Elevator Installed at the Acropolis Museum Site. Source: (Disabled Accessible Travel, n.d.).



Figure 4b: Inside the installed panoramic elevator. Source: (Disabled Accessible Travel, n.d.).

- **Fakhri Al-Baroudi House, Old Damascus, Syria (Early 19th Century)**

The Fakhri Al-Baroudi House, located in the Qanawat district of Damascus outside the old city walls, is one of the most prominent Damascene houses beyond the ancient city (Syrian Arab Encyclopedia, n.d), likely built in the early 19th century (Syrian Treasures, n.d.) In 2022, an elevator was added to improve accessibility to the second floor for wheelchair users. The contemporary structure contrasts distinctly with the traditional Damascene architectural style. Figure 5. A and 5b



Figure 5. (a) – Added elevator with a contemporary design. Fakhri Al-Baroudi House

(Source: @ Arch Khalef AlFahd – University of Damascus)



Figure 5. (b) – Fakhri Al-Baroudi House floor plan. The arrow indicates the location of the added elevator.

(Source: Fakhri Al-Baroudi House plans - University of Damascus)

- **The Grand Louvre and the Pyramid (1983–1989)**

The Louvre, France’s national museum and the world’s most-visited art museum, is housed in part of a palace complex dating back to the 12th century. As part of the Grand Louvre project, the iconic glass and metal pyramid was constructed between 1983 and 1989, serving as a central underground lobby that connects the museum’s three wings (Louvre official website). This intervention improved circulation and accessibility (Louvre Museum, n.d.) while intentionally contrasting with the historic architecture of the palace.

Functioning as a navigational hub for all sections of the museum, the Pyramid integrates key circulation pathways, connecting the exterior, such as universally accessible metro stations Figure 6b, with the interior at the level of the main museum lobby. It also houses a vast array of auxiliary services and features a central accessible lift (the ‘tube’), Figure 6d, which is linked to the reception area.

The concept design is inspired by the Pyramids in Giza, Egypt, with new materials, featuring a glass covering over the entire area and metal grid beams forming the structural system, in complete contrast with the style of the Louvre Museum, whose architectural style spans several historical periods, with various architectural interventions occurring between 1380-1681. However, it can be primarily classified under French Classicism (Palazzo, 2012, p.235). Figure 6a

Regarding the reception of the Pyramid, one of the opinions about the project is that the pyramid presents a metamorphosis that modernizes and expands the premises (According to the Louvre website), Figure 6c. This demonstrates that the Pyramid extension project has gained admiration and acceptance.



Figure 6. (a) – The Pyramid with a design contrasting the historic architectural style of the Louvre Museum. Source: Louvre Museum. (n.d-a)

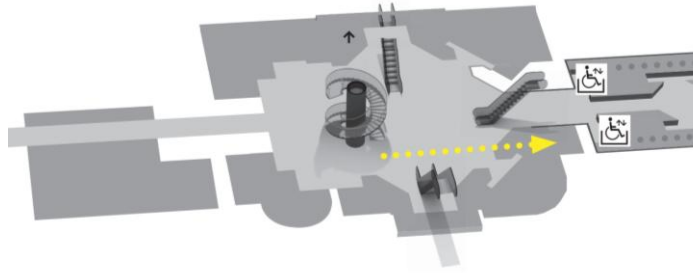


Figure 6. (b) – Level -2 of the Pyramid, and the accessible lift (the tube). Source: Louvre Museum. (n.d-b)






Figure 6. (c) – The central accessible lift (the 'tube') in the Pyramid. Source: [\[Link\]](#)



Figure 6. (d) – The central accessible lift (the 'tube') in the Pyramid. Source: [\[Link\]](#)

The following table, Table 2, summarizes the examples provided, highlighting historical sites and patrimonial buildings where added accessibility elements deliberately contrast with the original architectural style.

Table 2: Examples of contrasting interventions to integrate universal accessibility. Source: Author

Photo	Historic Site / Building	Place	Period	Accessibility Intervention	Year of Intervention
	The Acropolis Museum and site	Athens, Greece	6th century BC	Panoramic elevator	2020
	Fakhri Al-Baroudi House	Old Damascus, Syria	Early 19th century	Elevator with contemporary design	2022
	The Louvre Museum	Paris, France	1380-1681	The Pyramid with contemporary design and high-tech materials	1980s

5.3. Adapted Approach of Intervention for Integrating Universal Accessibility in Historical Sites And Patrimonial Built Environments:

The discussion remains ongoing regarding how to define the features and characteristics of universal accessibility elements that either harmonize or contrast with the historic built style, as perceived by the researcher.

In reference to the Venice Charter (ICOMOS, 1964), which establishes international guidelines for the conservation and restoration of historic buildings, Article 9 (on restoration) states that, in cases of conjecture, any indispensable additional work must be distinguishable from the original architectural composition and must bear a contemporary stamp. This clearly indicates that any intervention should be visibly differentiated from the original architectural characteristics.

In this regard, when introducing architectural elements without compromising the identity of patrimonial sites—and based on examples where modifications have been made to historical and patrimonial buildings—the researcher highlights the fruitful architectural intervention at the Louvre Museum with the integration of the Pyramid to resolve universal accessibility in the axis circulation. The monumental glass pyramid, constructed using modern materials at the time, contrasts sharply with the original architectural style of the museum. This addition represents a distinct architectural approach, creating a clear visual contrast that differentiates the new structure from the existing patrimonial building.

Through this evident contrast, the expansion is visually distinguished from the older historical building, allowing for a clear classification of architectural elements from different periods. Through this evident contrast, the new addition is visually set apart from the older historical building, allowing for a clear classification of architectural elements from different periods. In a certain way, and from the researcher's point of view, this approach reflects the philosophy of Modernism, in which form expresses the function of the built space—"form follows function," as articulated by Louis Sullivan (1896). In this context, the architectural intervention demonstrates a form of functional honesty, where its design and materiality convey its role as a recent addition that provides new functional value within the historical and patrimonial setting. The resulting distinction between the original characteristics and those of the contrasting intervention reflects, on one hand, the added contemporary *accessibility* value through contrasting architectural features, and on the other, preserves the identity and authenticity of the original historical environment.

Such an approach facilitates the identification of each architectural component's origin and period, thereby improving chronological classification. In doing so, the patrimonial identity of the site is maintained by ensuring a clear distinction between the original building and the new addition.

6. Conclusion

Revisiting the fundamental research question of how to integrate universal accessibility into patrimonial sites and buildings while preserving their formal identity, it was previously argued that interventions should be kept to a minimum.

To guide this process, key elements that cannot be overlooked or replaced by alternative solutions were identified, such as accessible vertical circulation (ramps and elevators, when necessary), accessible sanitary facilities, and proper lighting and signage, as discussed in Section 4.

When planning potential interventions, it is essential to strike a balance between the necessary modifications for universal accessibility and the sensitive nature of patrimonial built environments. This balance ensures that any new elements are carefully considered before being added.

Successful interventions are those cases where contemporary materials and technologies are used, creating a clear contrast between the original and the new structures. This contrast allows for the distinct classification of architectural elements from two different periods.

It is through this visible distinction—rather than imitation or replication of the original style—that the true identity and origin of each architectural component are preserved.

As a result, the patrimonial identity of the site is maintained by ensuring a contrast between historical features and modern additions, enabling the site to evolve while still honoring its heritage.

Acknowledgements

The abstract of this paper was presented at the Environmental Design, Material Science, and Engineering Technologies (EDMSET) Conference –2nd Edition, which was held on the 22nd - 24th of April 2025.

The article benefited from translation from Arabic and French into English, as well as language editing and clarity improvements using AI-based writing assistance tools. All ideas and results presented are original and produced by the author.

The article does not focus on identifying the level of accessibility in historic buildings but rather emphasizes how their identity can be preserved while integrating the principles of universal design.

Funding declaration.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors/individuals.”

Ethics approval.

Not applicable.

Conflict of interest.

The author(s) declare that there is no competing interest.

References

- A Federal, Provincial and Territorial Collaboration (2003). Standards and Guidelines for the Conservation of historic Places in Canada, Canada's historic places.
- Aslaksen, F., Bergh, S., Bringa, O.R., & Heggem, E.K. Translated by Ingrid Bugge from Norwegian. (1997). Universal Design - Planning and Design for All. The Norwegian State Council on Disability.
- BlindSquare. (n.d.). BlindSquare official website. <https://www.blindsquare.com/>
- British Standards Institution. (2021). Publicly Available Specification - Design for the mind – Neurodiversity and the built environment.
- David, M. (2008). Universal Design - Barrier-Free Access, Guidelines for Persons with Hearing Loss. Canadian Hard of Hearing Association.
- Disabled Accessible Travel. (n.d.). Accessibility: Acropolis and Museum. <https://disabledaccessibletravel.com/accessibility-acropolis-and-museum/>
- Elevatori Magazine. (n.d.). Accessibility in historic buildings: A case study. <https://www.elevatorimagazine.com/en/accessibility-historic-buildings-a-case-study/>
- Goldsmith, S. (2000). Universal Design - A Manual of Practical Guidance for Architects, Architectural Press.
- Government of Quebec (2023). Patrimonial des Immeubles et Sites Patrimoniaux, la Direction des politiques et de l'évaluation patrimoniale en collaboration avec la Direction des communications et des affaires publiques du ministère de la Culture et des Communications.
- Hugh Lane Gallery. (n.d.). About. <https://hughlane.ie/about/>
- ICOMOS. (1964). The Venice Charter: International charter for the conservation and restoration of monuments and sites. International Congress of Architects and Technicians of Historic Monuments, Venice. <https://icahm.icomos.org/wp-content/uploads/2017/01/1964-Venice-Charter.pdf>
- Jester, T.C. & Park, S.C. (2004). Making Historic Properties Accessible. Preservation U.S. Department of the Interior National Park Service-Cultural Resources- Heritage Preservation Services Brief no. 32. Washington, D.C.
- Louvre Museum. (n.d-a). A pyramid for a symbol. <https://www.louvre.fr/en/explore/the-palace/a-pyramid-for-a-symbol>
- Louvre Museum. (n.d-b). Accessibility for visitors with physical disabilities. <https://www.louvre.fr/en/visit/accessibility/visitors-with-physical-disabilities>
- Louvre Museum. (n.d-c). Visit the map, entrances, and directions. <https://www.louvre.fr/en/visit/map-entrances-directions>
- Mental Health Hotline. (n.d.). Neurodivergent vs. neuroatypical. <https://mentalhealthhotline.org/neurodivergent-vs-neuroatypical/>
- Mostafa, M. (2021). The Autism Friendly University Design Guide. Dublin City University
- National Disability Authority. (2011). Improving THE Accessibility of Historic Buildings AND Places, Government of Ireland
- North Carolina State University, The Center for Universal Design. (1995). Universal Design: Definition, Principles and Guidelines.
- Office québécois de la langue française. (n.d.). Official website. <https://www.oqlf.gouv.qc.ca/>
- Palace of Versailles. (n.d.). Official website. <https://en.chateauversailles.fr/>
- Palazzo, P.P. (2012). Architecture as Portrait - Exotism and the Royal Character of the Louvre, 1380-1681. University of Brasília.
- Parks Canada. (n.d.). Province House National Historic Site FAQs. <https://parks.canada.ca/lhn-nhs/pe/provincehouse/conservation/faq>

- Rautenberg, M. (2024). L'imaginaire patrimonial. Presses universitaires de Rennes, <https://doi.org.proxy.bibliotheques.uqam.ca/10.4000/13isl>.
- Smithsonian Institution. (n.d.). Accessibility at the Smithsonian. <https://www.si.edu/visit/accessibility>
- Sullivan, L. (1896). The tall office building is artistically considered. Lippincott's Magazine.
- Syrian Arab Encyclopedia. (n.d.). Archaeology overview. <https://mail.arab-ency.com.sy/archeology/overview/170716>
- Syrian Treasures. (n.d.). Fakhri Al-Baroudi House. <https://syrian-treasures.com/en/al-baroudi-house/>
- The Americans with Disabilities Act (ADA) 1990 -2005- Paralyzed Veterans of America
- Toronto Accessibility Design Guidelines. (2021).
- U.S. Department of the Interior, National Park Service, Cultural Resources. (1992). Preserving the Past and Making it Accessible for People with Disabilities.
- Veterans Affairs Canada. (2019). Hearing loss guidelines. <https://public.cdn.cloud.veterans.gc.ca/pdf/dispen/eeg/Hearing-Loss-2019-02-Final-EN.pdf>

Appendix A. Principles of Universal Design

The following principles were developed by the Center for Universal Design at North Carolina State University to guide the design of environments, products, and communications:

1. Equitable use:

The design is useful and marketable to any group of users.

2. Flexibility in Use:

The design accommodates a wide range of individual preferences and abilities.

3. Simple and Intuitive Use:

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

4. Perceptible Information:

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

5. Tolerance for Error:

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

6. Low Physical Effort:

The design can be used efficiently and comfortably, and with a minimum of fatigue.

7. Size and Space for Approach and Use:

Appropriate size and space are provided for approach, reach, manipulation, and use regardless of the user's body size, posture, or mobility.

7. Appendix B. Summary of Accessibility Needs and Solutions for Various User Groups in historic buildings and patrimonial environments

Appendix B provides an overview of the previously discussed accessibility considerations for different user groups and their potential applications in historic buildings and patrimonial environments. These considerations are consolidated in a table corresponding to the discussion in paragraph 4.1.1, Critical Requirements for Individuals with Motor Disabilities. (Source: Author).

Regarding the term "neurodivergent" (Group B in Table 3), it refers to individuals whose brain function differs from the typical neurological pattern, affecting perception, language processing, behavior, and other cognitive functions. This includes individuals on the autism spectrum, among others.

Many conditions fall under this category, including Autism Spectrum Disorder (ASD), Attention Deficit Hyperactivity Disorder (ADHD), dyslexia, Tourette syndrome, dyscalculia, and Obsessive-Compulsive Disorder (OCD). <https://mentalhealthhotline.org/neurodivergent-vs-neuroatypical/>

Table 3: Accessibility considerations and requirements for different user groups in heritage or built environments

Main user groups	Accessibility essential considerations	Requirements addressed through alternative solutions (without architectural or landscape modifications)	Critical requirements necessitating architectural or site interventions
A – Motor disabilities	<ul style="list-style-type: none"> - Accessible outdoor pathways - Step-free access or ramps - Accessible entrances - Elevators - Universal toilets 	<p>No alternative solutions — architectural or site interventions.</p>	<ul style="list-style-type: none"> - Incorporation of ramps and elevators necessitates architectural modifications. - Adding accessible toilets requires interior design adjustments.
B - Neurodivergent individuals	<ul style="list-style-type: none"> - Availability of quiet rooms or sensory refuges - Use of calming colours, avoiding stimulating colours (e.g., red) - Avoidance of glaring light sources 	<ul style="list-style-type: none"> - Repainting walls and architectural elements in historic settings is discouraged to maintain their original character. - Creating quiet rooms may be impractical; trained staff can assist visitors in distress. - Adjusting lighting levels is feasible and beneficial. 	<p>The style and integration of lighting sources are to be defined.</p>
C – Visual impairment	<ul style="list-style-type: none"> - Use of colour contrast for orientation - Installation of podotactile (tactile paving) markers for level changes - Availability of staff to provide orientation assistance - Accessible signage incorporating Braille, tactile, and auditory features - Adequate lighting with minimal glare 	<ul style="list-style-type: none"> - Implementing colour contrasts and tactile signage to assist navigation. - Ensure staff are trained to assist visually impaired visitors. - Provide signage with Braille and auditory components. - Use appropriate lighting to enhance visibility without causing glare. 	<p>The placement and style of screens and electronic equipment are to be defined.</p> <ul style="list-style-type: none"> - The style of lighting sources is to be defined.
D – Hearing impairment	<ul style="list-style-type: none"> - Use of sound-absorbing materials to minimize reverberation - Visual representation of auditory signals - Provision of hearing aid devices - Availability of staff trained in sign language 	<ul style="list-style-type: none"> - Incorporate visual cues for auditory signals. - Provide hearing assistance devices - Ensure staff are trained in sign language. - Adding sound-absorbing materials may be unnecessary if the spaces are already acoustically isolated. 	<ul style="list-style-type: none"> - The placement and style of screens and electronic equipment are to be defined.