

## Historical buildings - Modern use Rehabilitation is a sustainable concept over time and Space

Dr. Daliah Shebl Said

Lecturer in architecture department , Faculty of engineering ,  
Kafr- Elshieh (KFS) university, Egypt.  
Email: [Dalia.shebl@gmail.com](mailto:Dalia.shebl@gmail.com)

**Abstract:** Rehabilitation the historical buildings become a necessary concept not option in our life, it is considered a sustainable concept all over the world to conserve the historical buildings with new ideas respect their special pattern and historical characters, with growing demand in many parts of the world for new buildings, we find millions of buildings already exist but are not being used to their full potential, despite their historic character and environmental features.

The adaptive reuse of older buildings can play a pivotal role in the sustainable development of the city. Many of these buildings are well designed, soundly constructed and fit for continuance of use so most of methodologies followed a rehabilitation standard of their historic buildings and use them for new appropriate purposes.

The research presents the importance of rehabilitation and reuses of old and historical buildings in our modern life and the relationship between the concept of rehabilitation and sustainability. The study takes Kraków City in Poland as a case study which contains a numerous examples of successful experiences of old and historical buildings which have greater aesthetic and heritage values and contribute of demand needs in modern life. The study applying the concept of rehabilitation and intervention standard of selected buildings in the framework of dimension of sustainability and shown the advantages of the rehabilitation of historical buildings with adaptive use from both economic and environmental impact and extending the lifespan of the buildings stock through cases study in Krakow which shown us how the re-use of historical buildings is used as a management tool to prompt the cultural , historic and aesthetic value and how is played a great role to refreshment the economic, investments and conserve the saving life of the buildings in the frame of sustainability.

### Keywords:

Historical – Modern – Rehabilitation – sustainable- concept.

### 1- Introduction:

People in many cities live between historical buildings, those buildings are not isolated icons and there are part of a large network of areas, places, towns and landscapes. Most buildings were built for a purpose that no longer exists or has changed and often lagging behind today's performance standards, those buildings are strong candidates for rehabilitation. Those buildings are adapted to over time, incorporating layers of different periods and utilizing buildings that may have been taken from other (Orbasli, 2008). So we can inspire the concept of rehabilitation from Charles de Tocqueville<sup>1</sup> "When the past doesn't illuminate the future, the mind of man turn in the dark"(Purchla, 2005).

Many international charters indicate the adaptive reuse as a necessary option in modern life as Venice charter 1964 article 5 "*The conservation of monuments is always facilitated by making use of them for some socially useful purpose*".

<sup>1</sup> French political and historian in 19<sup>th</sup> century (1805-1859), famous works "Democracy in Americans", Today considered an early work of sociology and political science.

Conservation and Rehabilitation is a very complex process and it requires an application of precise and interdisciplinary procedures that depend on understanding and Safeguarding. It is necessary to maintain, repair, restore and adapt historic property to preserve its cultural significance. This process contributes in many sides of modern life not only of preserve the heritage but also in managing and building heritage, economic opportunities, tourism industry .... Etc.

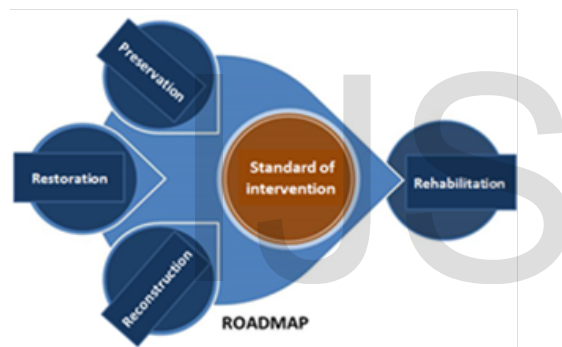
### 2- Architectural rehabilitation "concept and function".

Rehabilitation is considered one of the Heritage conservation standards which mean first of all the wise management of function and potential changing. Conservation and rehabilitation is based on the individual needs of each historic place - no two are the same. Rehabilitation strives to bring heritage sites into the modern world without damaging any historic elements. Adaptive reuse of historic places brings new life to valuable heritage buildings in ways that extend the site's longevity and utilization (Orbasli, 2008).

It requires an integrate approach not only the

form of historic monuments – whether individual objects or systems which the previous made of heritage preservation thinking already encompassed, but also their function (Purchla, 2005).

There are many definitions of rehabilitation as the standards of document in the U.S. preservation community define it as “The process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values”. And it is considered a multi- disciplinary process which dependent on previous process of intervention and it must respect the evidence "history" (Orbasli, 2008). All other processes of intervention standards "preservation, restoration, reconstruction .... Etc." are used as a previous stage in old buildings to be ready to rehabilitate it as figure (1).



Fig(1) Show the suggestion process which previous rehabilitation

In previous four standards, only Rehabilitation includes an opportunity to make possible an efficient contemporary use through alterations and additions which called "Architectural rehabilitation".

Architectural rehabilitation ranges from preventative maintenance and carrying out minimal repairs to significant modifications whether part demolition or opening up, to allow a new function to thrive in an existing building (Orbasli, 2008). So the Compatible design is considered a new design that maintains some existing elements such as scale, color, massing, proportions, and materials. It makes some ties to the older elements if not fully, etching them; typically the newer portion is architecturally expressed as supportive in design to the original building rather than in competition with it (Tyler, 1999).

### 3-Guidelines of Rehabilitation:

Many historical buildings are no longer viable in their original function and use but we should keep their architectural integrity. for these structures a common type of intervention is rehabilitation to an adaptive reuse. When adaptive reuse is chosen as the appropriate intervention, the technique of alternations or additions may be made, but they should be contradict the original historical elements (new construction is typically contemporary in design and may be either compatible with or contrasting to the historic structure).

The choice of treatment depends on a variety of factors, including the property's historical significance, physical condition, proposed use, and intended interpretation. The conversion and adaptation with suitable use should enhance the significance and qualities of the historic buildings, this process should respect the various values which associated with cultural heritage such as age, rarity, architecture pattern, artistic, culture value, emotional spiritual and educational values of this historical sites. For instance the conversion of a church will need to be more sensitive in choice of a new use, the division of spaces and respect to its former spiritual value.

Most buildings have proven to be flexible and with a little adaptation capable of accommodating new uses. It doesn't mean that all uses are appropriate for a historic building. If the level of intervention requires, it will cause too much damage to the historic fabric, consequently it will not be an appropriate new use. Proposals of a new use must first consider whether the building is appropriate for this use or not, whether the new use and necessary changes protect and enhance the culture significance of the building. Added to this the financial considerations linked to demand in the area for such a use and therefore the ability to realize a financially viable project. While a certain building be suitable for certain new uses in one area, there may not be a ready market for the same uses in another place (Worthing D. & Bond S., 2008).

### 4- Rehabilitation and Sustainability:

The question of sustainability arises, what is the today's aim to ensure that the rehabilitation of historic buildings is already within the framework of sustainability in terms of utilizing and safeguarding heritage assets for future generations?(Through rehabilitation,

maintaining a historical balance, environmental considerations and the management of heritage activity by refer to the concept of sustainability that "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (Brundtland Commission, 1987). Sustainability is studied and managed over many scales (levels or frames of reference) of time and space and in many contexts of environmental, social "Culture" and economic development.

In some countries policies of "sustainable development" have now been developed according to heritage management while in other sustainable goals it may be implicit (or at preliminary stage with taking into consideration the) foregoing themes what should be preserved through the rehabilitation process. One most aspect of these is the realization that not only is it important to preserve culture and history assets, but also whether the capacity to allow change within the historic buildings can be preserved. The changes within a historic environment may often be the key to long-term preservation and sustainability (Pickard, 2001).

Today, in the quest for a new relationship between heritage and development which is now (fashionable to label) "sustainable development" it is vital to recall the varying balance in the relationship over the last 200 year (Colquhoun, 2002). From the view of future sustainability, rehabilitation is considered a sustainable management of changes of historical buildings become redundant for a whole host of reasons, from changing economic and industrial practices, demographic shifts, increasing cost of upkeep and maintenance and primarily because they are no longer suited for the function they were being used for and a viable new use has not been identified (Orbasli, 2008).

### 5-Kraków City As Case study.

Kraków City is considered one of the oldest cities in Europe; its date backs to the 7th century. It was the capital of Poland from 1038 to 1596, and the capital of the Grand Duchy of Kraków from 1846 to 1918, then the capital of Kraków Voivodeship from the 14th century to 1999. And it has many well-preserved buildings that have styles of architecture dating back from the 1100. It was called a "progenitor city" or "polish Rome" and by the way the "polish troy" in the beginning of 18th and 19th

centuries was unaffected by the conflict between urban function and form that was already characteristic of many metropolises. It also exposes to many disaster, wars, pillages and economic crises. Hence at the threshold of the 19th century, Kraków was regressing rather than developing suffering from an over potential of heritage. The historical features of the city are development in its period as a free city within a short time ... Old Town in Krakow has been listed in UNESCO World Heritage Site as early as 1978, following the political transition of 1989.

Since then this most valuable and authentic of Polish cities has been subject to both revitalization and restoration programs, as well as anarchic alterations. Kraków's beauty has made it an increasingly popular tourist attraction, but it also began attracting business and property.. it progressed from demolishing its ruined monuments to restoring them. The process includes restore the centralization of the city and restoration processes of historical buildings then was the first phase of the complex relationship between heritage and development (Colquhoun, 2002). Although the city had been for many centuries, but it featured a new look. Its impressive gothic and renaissance architecture remain relatively intact. And it contains many successful examples for adaptive reuse of historical buildings which contribute on refreshment the modern life in the city.

### 6- Case Studies & Criteria of choice:

The study takes four cases of old and ancient buildings in Krakow according to some criteria of choice that depends on the variety of each construction building time and located for main market square. They also exposed to series of transformations doubtless reflected the key developments of the political and culture history of the city in the 19th and 20th centuries. And they had been intervened by many times process across their long life, beside that there are scores of successful examples and experiments, (renovated historical motifs with boldly introduce modern structure and decor solution conveying our reaction to constructivism, all of cases played a great role in the history and formed a distinguished characterize of the historical cityscape as fig (2).

Building		National underground museum	International culture center	Pharmacy museum	Jan Matejko house
The construction era		Middle age mid-13 <sup>th</sup>	Napoleonic age 18 <sup>th</sup> cent.	Renaissance 15 <sup>th</sup> century	Modern Era 19 <sup>th</sup> century
Level of intervention	Preservation	•	•	•	•
	Restoration	•	•	•	•
	Reconstruction	•	•	•	•
	Replacement	•	•	•	•
	Modification	•	•	•	•
	Rehabilitation	•	•	•	•
The year of intervention		2010	2003	2006	2007
Type of building "users"		public	public  + education	Public+education	public



Fig(2) photo of Google map 2014 show the historical center and the location of cases study

**6-1- The Rynek underground museum.**

Glory piece at the center market square, existed on the site of the Cloth Hall (Sukiennice) since the mid-13th–a neo-Gothic structure which has served as a market for merchants since the middle ages, was opened to visitors in September 2010.

**6-2- Museum of pharmacy.**

It was back to 15th century, located in 25 Swietego Jana, Krakow, although it was rebuilt number of times; some of its historical elements have been preserved until today. The rehabilitation of the building as a pharmacy museum has been done in 1964. And it contains a several tools to manufacture the medicine and many kinds of dried herbs.

**6-3-Internaional Culture Center (ICC).**

It was called a Ravens house was in the hand of polish nobility, turned it into Krakow residence in the following two centuries. The Napoleonic age was an important chapter of

national mythology in 1842. Then it was converted into the modern bank in Krakow 1872-1873. It was first illuminated with electrical lights in Krakow 1880(Glowny, 2009).

In 1998 ICC took up an ambitious investment project to adapt the historical building to the growing needs of a fast developing institution .It took seven years of intensive activity before we could arrange the space that would correspond to our needs and in 2003 we saw the complete of the refurbishment , complete the construction works.

**6-4- Jan Matejko house.**

It is considered the first bibliographical museum in Poland. It located in 41 Floriańska St. where the famous painter was born, lived, created and died. The Museum has gathered different items that related to his work as an artist and teacher, as well as ( Matejko's passion for collecting, showing objects connected to culture of Poland, Europe as well as the Middle East and the Far East. Both of the permanent and numerous temporary exhibitions, Jan Matejko House popularizes the unknown aspects of the artist's life and work, as well as his extensive collections of handicrafts, textiles and militaries.)

**7- Analysis the intervention process in the framework of sustainability:**

The standards of intervention are different according to the situation of each building. Our research is limited so that we study four cases of two different buildings "ICC and underground museum" (for which have been done a major modifications and additional proceeding. Hence when we analyzed any historical buildings, we included all elements which effect on it . Also We should preserve some of concepts which contribute of successful intervention process includes the three interconnected domains of sustainability: environment, economics and social "culture" as:

**7-1- Environmental impact:**

Rehabilitation and adaptive reuse is considered one of the methods of environmental improvements and managements the heritage to ensure that buildings are kept alive (Pickard, 2001). Adaptive reuse project can be invested in and benefit the public. This allows the building to continue serving the community in a different capacity and still keep a lot of its historic fabric as possible. In recently year there are many examples of imaginative new uses for

historic buildings, redundant churches have been converted to art centers, concert halls and even residential block. Sometimes a simple reorganization or the addition of a new circulation space will make a building viable again (Orbasli, 2008) with take into consideration the criteria of environmental sustainability.

### 7-1-1- Preserve the exterior environment "cityscape and familiarity".

On the urban level, reusing historical buildings to keep pace with modern use may insure the viability of historic centers and stimulate urban regeneration. Additionally, state that reuse of the city's architectural heritage can act as part of the city's image and its city branding. In Krakow about 50 percent of the sectors damaged through different ages, historical structures could be rehabilitated and the other half would have to be built anew where retaining the architectural and historical character of the city was a priority.



Fig(3) Kraków's market square and Cloth Hall 1890



Fig.(4) The main market square and in the right the cloth hall

### 7-1-2- Preserve the historical value and Identity.

The concern of conservation is the past, present and future of the building and involves making balanced and respecting of: evidence "history", the present day needs and resources available and future sustainability (Orbasli, 2008).

Rehabilitation begins with recommendations to preserve the identify and historical value, rarity that are important in defining the building's historic character and which must be retained in

order to preserve character which mostly defined by the form and detailing of exterior materials as fig(5) which show us the preservation process how keep the historical and distinguished character in Jan Matejko house.



Fig. (5)The façade of Jan Matejko house before and after restoration and preserve the identity and authenticity

### 7-1-3- Conservation the Historic Materials and Features

Identify the form and detailing of architectural materials, features and Historical character which must be retained. So the evaluation of its physical and environmental conditions should always begin at this level.

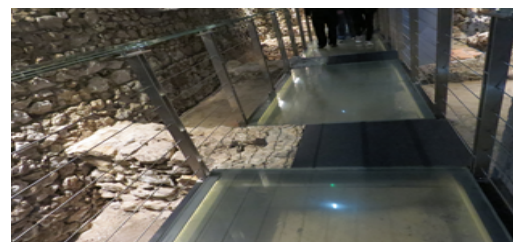


Fig.(6) The relation between old and new material in underground floor of national museum , Krakow

### 7-1-4- limited intervention as much as possible

We should reduce the degrees of intervention as possible such as patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading them according to recognized preservation methods as fig.(7) which shown the underground museum during the beginning of intervention and consolidation the roofs . Repairing also includes the limited replacement with compatible materials. Although using the same kind of material is preferred option, but substitute material is acceptable when there are

surviving prototypes in the form and design as well as the substitute material itself conveys the visual appearance of the remaining parts of the feature.



Fig. (7) The underground museum in Kraków when begin to intervene and consolidation the roofs

Rehabilitation is described as a suitable approach when existing historical features are damaged or deteriorated but modification can be made to (update portion to the structure, even adapting the building for a new purpose. Generally, the changes are most radical on the interior, where more latitude may be taken in making changes are generally minimal (Tyler, 1999). Replacement of Deteriorated Materials or Missing Historic Features, Rehabilitation guidance is provided for replacing an entire character-defining feature with new material because the level of deterioration or damage of materials precludes repair as fig.(8) in Jan Matejko house. If the essential form and detailing are still evident so that the physical evidence can be used to re-establish the feature as an integral part of the rehabilitation



Fig(8) Renovation and replacement the ceiling of living room in Jan Matejko house

Thus, if adequate historical, pictorial, and physical documentation exists so that the feature may be accurately reproduced, and if it is desirable to design and construct a new feature based on such information is appropriate. However, a second acceptable option for the replacement feature is a new

design that is compatible with the remaining character-defining features of the historic building. The new design should always take into account the size, scale, and material of the historic building itself and, most importantly, should be clearly differentiated so that a false historical appearance is not created.

#### 7-1-5- Choose carefully the alternation and additions for New Use.

The conservation of historical interiors may be more challenging towards new use. Exterior and interior alterations of historical building are generally needed to assure its continued use, but it is most important that such alterations do not radically change, obscure, or destroy character-defining spaces, materials, features, or finishes. Those additions are still judged to be the only viable alternative. It should be designed and constructed to be clearly differentiated from the historical building and so that the character-defining features are not radically changed, obscured, damaged, or destroyed "Venice Charter 1964" as fig (9) the intervention process by inserting the new bridge as a road in underground museum.

Alterations may include providing additional parking space on an existing historic building site; cutting new entrances or windows on secondary elevations; inserting an additional floor; installing an entirely new mechanical system; or creating an atrium or light well.

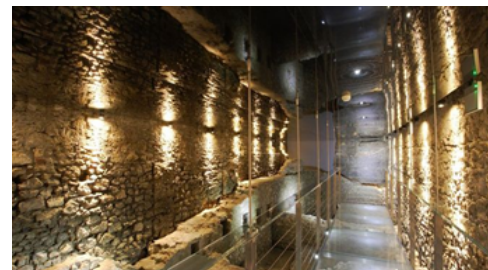


Fig.(9) New addition "bridge and handrail" in underground museum

#### 7-1-6- Energy Efficiency and Safety Considerations.

For conversion the historical building to another use in contemporary life, we should take into consideration some requirements of saving the energy, accessibility consideration, health and safety code, these works are quite often an important aspects of rehabilitation projects without destroying distinguished character and main historical features in the process which was fitted with modern services

and systems of heating , air condition , fire safety facilities, alarm, lighting, sanitary facilities, and technical control backroom. All that have a potential positive impact on the historical building sustainability which should be developed to meet the criteria of sustainability as fig(10).



Fig.(10) show the smart light system and air condition in some parts in underground museum, Krakow

For example cloth-hall building exposed to many disasters over times. Particularly the display areas inside were in poor condition and unprepared for the demands of 21st century as a museum or shopping area. Shopping areas began in August 2006 and lasting over 4 years, the building was given a complete re-modeling with lifts and air-condition ,also lighting system was installed due to respect the historical pattern and the authenticity of the place as fig.(11) .



Fig(11) New light system in the shops within the Cloth Hall building, Krakow

### 7-2-Rehabilitation and culture & built heritage.

Rehabilitation process is the sustainable management of change; it is not simply an architectural deliberation but an economic and social issue. Modern heritage preservation, rehabilitation must consist in the wise managements of heritage potential and in a continuous search for compromise preservation and inevitable change. This requires increasing knowledge of economics, management theory, marketing, and also law and public administration on the part of conservation

services. At the same time the philosophy of preservation and rehabilitation process contribute in preserving and building (heritage for much of their useful life, buildings change incrementally and are continuously updated and adapted to user needs while the structure remains the most permanent elements, changes are likely to be made to the building envelope and more regularly to the internal layout. At the current time some buildings are updated or changed as often as every 7-15 years (Colquhoun,2002) fig(12).

The most highly regarded from rehabilitation economic benefit from rehabilitation is tourism, by the end of twentieth century. Tourism had become the principle reason for the conservation considerable evidence and rehabilitation the culture heritage. It also considered a direct economic benefits which ( considerable evidence of rebuilt heritage). Thanks to this policy Krakow marks record the highest number of visitors in 2012 about 9 million people (Report from the Malopolska Tourist Organization 2012). Where the statistic refers that the main reasons for visiting the city are: its historical monuments and characteristic pattern (Witold, 2010) and still keep in this percentage until now and they have managed to maintain a trend of positive growth of tourists each year.

### 7-3-Rehabilitation and Economic Opportunities.

Heritage conservation is not only compatible with economic development; it can be an effective economic-development tool, the rehabilitation and adaptive reuse of heritage buildings not only preserves cultural values, it can be a profitable investment ; it has increased the value of property in the surrounded area more than the proposed office development would have done(Orbasli,2008).

Rehabilitating heritage buildings is considered the sustainable management and effective strategy for revitalizing older building and historical districts with commercial uses, heritage conservation and economic development which have created thousands of new jobs, businesses and investment in historical downtown (Heritage Canada Foundation, 2009).

Reusing portions of the existing building, lower site preparation expenses and access to existing service hookups all help to reduce construction costs for rehabilitation projects.

Heritage conservation is an effective catalyst for stimulating local and regional economies. Studies show that rehabilitating heritage buildings has a greater economic impact than new construction. On average, the cost of a large commercial rehabilitation will be about four per cent lower than comparable new construction on a clear site. If the new building requires demolition of an existing structure, the savings are greater (Rypkema, 2003). Even where rehabilitation costs more than new construction, it can still produce a higher rate of return. Central locations, interesting architecture and high-quality materials will often lead to higher rents and occupancy rates for heritage buildings (English Heritage, 2002). Bringing vacant and underused buildings back to productive life creates business Opportunities, more labor-intensive and more jobs and adds to the local tax base. Because they offer diverse space and a wide range of rents, historic buildings are especially well-suited to new business uses in our modern life. For example the Krakow development strategy enhances and encourages cooperation between a wide ranges of entities, institutions and communities around pro-investment initiatives, including promotional activities of historical events and ancient buildings which considered one of the key determinants of the investment attractiveness (of Krakow is a special economic zone (CBRE,2014). So we find the rehabilitation process is further supported by the growth of the construction investment sector, as well as globalization and participation of the corporate capital in city investments. It is also quite true that these procedures develop more smoothly in cities which have maintained the historical and distinguished buildings in the city.

#### **8-Conclusion" Lessons for building Reuse: Learning from Krakow".**

The case studies illustrated different experiences of historical buildings reuse which considered successful experiments by all interviewed parties and explain the importance of re-use the historical buildings, which have been actual refurbishment projects and their effect on building rarity, environmental analysis and whole long life, where The Krakow contain more than 1200 of historical buildings in the city's urban core is currently rehabilitated in public and private sector. These examples shows how combine historic architecture, in a modern uses as an exhibitions, art gallery and libraries in different examples of museums and

help us when to begin in rehabilitation process of old and historic buildings that:

- Preserving our heritage does not mean giving up progress and economic development ... rehabilitation process contributes in many sides of modern life not only to preserve the historical buildings and give them more long life and confirm the identity and authenticity of the place and keeping the historical character and memories, but also contribute to solve many urban and social problems where rehabilitation consider source of increase the income and help historical city to present a chance for employments ,built heritage, economic opportunities, tourism industry and refreshment the investments .... Etc.

- The adaptive reuse makes an environmental and economic sense to use, where the unique setting created a kind of curiosity that triggered people to enter the old building so we can't waste the culture resource that remains available for exploitation.

- Encourage the reuse of vacant buildings, Through innovative public policy and creative private development, Krakow is demonstrating how older buildings can be repurposed to serve the new needs, that offer a creative economy and new jobs opportunities and help meet ambitious goals in our modern life.

- Conservation and rehabilitation of historical building is a long-term activity which can be estimated on at least 30 years and we should make a periodically survey to ensure the effectively of the reuse activities in modern life.

- The intervention process should conserve the authentic character of existing buildings, including architectural features and building materials that tell a unique story to prospective tenants and buyers.

- After the intervention process, the building should be object of a plan of conservation, with the carrying of periodic inspections, in order to identify any anomaly that has occurred in the meantime.

- Plan for diverse uses and frequent changes in use when investing in new building infrastructure and services, including elevators; heating, ventilation, and air-conditioning systems; soundproofing; and building access, most services connected with culture are a type of activity that has a positive effect on the state of preservation of historic monuments.



- Integrate building reuse as a goal in other initiatives policies and reforms, such as zoning code updates, building code reforms, parking policy changes, transit-oriented development guidelines, and climate adaptation plans.

- Modernize outdated zoning and building regulations to align them with comprehensive plans for re-urbanization, including the reuse of existing structures.

- Promote the speed to market advantages of buildings reuse projects to prospective tenants and buyers when compared to new construction.

- Support efforts to create diverse, mixed-use reuse of historic buildings in the city that attract and create an interesting mix of shopping, hospitality, leisure and culture.

- The architects and conservators should be agreed that reusing the historic buildings is an opportunity to make the building accessible to large public where the building is transformed into for example a museum, cinema, art gallery or dwelling or other uses.

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