

Adaptive Reuse of a Railroad Network

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Abstract: The word or the term adaptive reuse is described as the reuse of the old building or site for new purpose. This has social, environmental and economic benefits for the inhabitants living there. Sometimes the building start to outlive their original purpose for which it was built. Whenever the original use of a building or complex changes, architects have the opportunity to create or bring the primary change in the function of the structure, while keeping its sense in true form. The conservation and sustainable development of the site provide all the benefits to community and the stakeholders. The built structure doesn't only contribute in economic or environmental composition, but also in maintaining social and cultural identity of the building, which creates a spirit and sense of the place.

The main aim of the paper is to evaluate the potential of unused 13-mile railroad crossing and later developed into 32 acres' Riverside park as an adaptive reuse model.

Keywords: Acclamation, Adaptive Reuse, Innovation Sustainable.

1. Introduction

Adaptive reuse known as reuse of buildings or site for new purpose or other than they were originally designed and built. These new users offer economic, social and cultural benefits to their environment. It can include changes that are purely aesthetic. The type of building location divided the potential value of the property that will be maximized by adapting that space.

Once an old structure become useless or unsuitable due to which it has remained unused, adaptive reuse becomes an option for reclamation of sites.

Adaptive reuse offers a chance to encapsulate the past design while moving forward with modern ideas. It brings up a relation between the old age design methods and current design ideas

A. Objective

To evaluate the potential of adaptive reuse by taking the case study of The Highline project in Manhattan.

How a 13-mile site of railroad crossing was converted into riverside park.

B. Types of building abandoned

There are often many reasons due to which the building gets abandoned or depending upon the present situation the building becomes subject for adaptive reuse

Industrial building: As the cities become dense and as population increases, the process of manufacturing moves away

from city.

Political building: The current and future visitors of the site decides the places and building.

Community buildings: Schools, Churches, Malls where the uses change overtime.

C. Principles of adaptive reuse

- Perform the functions well for which they are designed.
- Be long lasting and adaptable to new users.
- Respond well to their surrounding and enhance their context.
- Have a visual coherence and create delight for users and passersby.
- Be sustainable, no-polluting, energy efficient , easily accessible and have a minimal environmental impact.

D. Advantages of adaptive reuse

- Energy conservation
- Enhance community character
- Contributes to sustainability
- Encourages Investment
- Cost savings.
- Enhances Innovation
- Saves time
- Material saved

E. Impact of adaptive reuse

The societal value of the site or building is increased by its members and visitors. It can offer growth in historical tourism to its city. It is necessary to deal with the problem of the structure before it is kept for demolition.

F. Reuse strategy

Technical: To analyse and study technicalities of the structural system of existing structure.

Typological: To understand the typologies of building for the existing and new use.

Strategically: Concentrates on the process used for adapting structure over, within, around and all.

2. Case study

A. Railroad crossing to riverside park

Location: Manhattan, New York

Distance: 13 mile

Area: 32 acres

Significance: In mid-1800's the site was once a part of street level tracks run by New York Central Railroad. It was being used for supplying food to lower Manhattan, but created dangerous condition for pedestrian. 540 people had been killed by trains. So red flags were waved for all the trains. Later in 2009, the highline was introduced to public of the Manhattan as the riverside park. It has 1.45-mile-long green way featuring 500+ species of flora and fauna. It is home to a diverse suite of public programs, community and teen engagement and world class artwork and performances free to all.



B. Parameters covered

1) Design

Cleaned and removed some elements of old site to strengthen and modernized. Removed parts were restored and later used for another purposed. For example, old railroad tracks were integrated in formation of flower beds for planting.



2) Structure

Before the other structure could take shape, the steel rails, gravel, earth and debris and the first layer of old concrete was necessary to eliminate all elements of the former. All that needed was to make the necessary repairs and reach the steel structure of the High Line. Some of repairs were waterproofing for the steel beams in concrete and drainage systems had installed on the old structure.

C. Church into a Book Store

Location: Maastricht, Europe
 Architect: Merkx + Girod
 Area: 750 sq. m.



Significance: In 1294 the building was once part of a friary knocked about over the centuries by various invading armies. It was being used by the citizens of Maastricht as an indoor bike pound. Later, turned into a warehouse. Had stone vaults and faded remains of ceiling paintings from around 1337; and others by the artist Jan Vessens, depicting saints and sinners and episodes from the Bible, dating from 1619.

1. Installation of a tall three-storey black colored steel book stack in the long, high nave.
2. Café is introduced in the choir area. The main feature of the cafe is a long.
3. Popular books which are kept on lower shelves, while esoteric, academic and theological works are kept closer to heaven. These are reached by stairs which is located in sleek, well-made book stack, although there is also a lift.

D. Parameters covered

1) Adaptive Reuse

The church is a monument, need to be kept as an open space as much as possible hence, introducing the two floors asymmetrically gave respect and emphasis to the structure. The new use blended well in the structure due to matching space requirements for both old and new uses.

2) Space

The large scale of the steel book stack was necessarily kept grand and wide because a spread of shelves along the nave would have detracted from its character; and also café Selexyz needed 1,200 sq. m of selling space to increase the shop's finances add up. Changes planned in lighting was another intervention that it was integrated with the furniture or the volume to avoid pollution in the interiors.

3) Structure

Original frame structure was untouched; the book stack to two floors above was done in order to have more horizontal free space on ground.

3. Guidelines

- Before keeping structure under reuse, a study is must about the original and new use about how it is incorporated.
- Surrounding of the site should always be kept in mind to keep the sense and spirit of the place.
- Choice of location defined the social factor and typology of site.

- Budget for reuse, sustainable construction and durability should be kept while reusing the building.
- Innovative designs should be carried out so that importance of the building is not lost.
- Combining new and old techniques & material in construction. Material of original structure should be maintained.
- Reusability options should be thought according to societies demand and economic demand.

4. Conclusion

The research began with an introduction of the concept of adaptive reuse of buildings in theory and in application, highlighting the evolution of its diverse approaches. This research is to evaluate the strategies of adaptive reuse of building. Various types of buildings are abandoned due to their different reasons. It demonstrates that restoring and retaining is not only important but also to give them a new purpose.

On the other hand, if the special consideration and attention that they need is not provided, they can easily get abandoned

and demolish as a result of the neglect of the society. In this study, THE HIGHLINE, a good example of the railway network in New York, was examined and a proposal for a new use as a riverside park has been developed. Architects have attempted to provide a contemporary adaptive reuse approach for the building, which will help to solve the problem of lack of attention and make the building or site more beneficial for the society and the neighborhood.

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