

Transformable Spaces

Surbhi Barche¹, Sourabh Gour², Nikita Mehta³

^{1,3}Fourth Year Student, Department of Architecture, SDPS Women's College, Indore, India

²Professor, Department of Architecture, SDPS Women's College, Indore, India

Abstract: Motive of this paper is to enhance the importance of transformable spaces, especially which can change the shape and location. Different purposes of transformable architecture are discussed in this paper. Related projects were seen during the study and case studies are done to get profound knowledge of transformable designs.

The change in location of the transformable structure could be manually or by any other external force. By this we can provide hutment to the labours working on construction site of large scale and temporary shelters to flood victims/earthquake victims etc. until the permanent arrangement of their residence is being built/arranged.

Keywords: Transformable spaces, transformable architecture, demountable, deformable.

1. Introduction

Transformable structures are those structures in which the time of construction is being saved and could be re-locatable anytime and could be used number of times which means that they are reusable and demountable. Components of these structures are replaceable and removable according to the needs of the user. These structures are lightweight as compared to permanent structures and are easily removable from site that's what makes them ecologically favourable structures. These shelters provide a good residence to the onsite labours. Construction of temporary shelters is the only option for the residence of the labours on site or near the site because the construction of any permanent structure cannot be done on site other than the proposed construction. The dry constructed structure of these hutments is easy to install and it minimizes construction cost.

2. Related work

A. Literature review

1) *Space saving techniques by the use of transformable architecture by raphael reuter*

Focus of this study was on transformable architectural designs. Different types of transformable architecture are discussed in this paper and different purposes for making transformable designs. Purposes and meaning of transformable architecture is well explained in the paper. Various case studies are mentioned and explained. This paper focuses on space saving techniques by transformable architecture that's why many different terms are also introduced in this paper.

B. Case study

1) *A case study on the temporary shelters provided to Narmada flood victims*

Live case study was done to see the transformable structures which were the temporary shelters provided to the Narmada flood victims in a town named Anjad in the district of Barwani, Madhya Pradesh, India. They provided rooms to families with common toilets, not attached to their dwellings which were present on the other side of the road and electricity fittings were done using the cpvc pipes. Units of toilets for males and females were different. Windows were present in every residence to serve the purpose of natural ventilation.



3. Advantages of transformable structures

- Durable
- Rust proof
- Economical
- Various Sizes
- Robust Structure
- Excellent Strength
- Customized designs as per clients requirements are available.
- Walls of different heights can be constructed.
- Light weight panels which is easy to lift.
- All weather proof construction.
- Suitable for all types of thermal condition.
- Thermal insulation.
- Minimum maintenance.
- Very quick completion.
- No maintenance needed.
- G+1 or G+2 structures can also be provided if there is scarcity of land.

- Ready to move in structures.
- Economical
- Good residual value after completion of use.
- Weather & termite resistant
- Fixing of smoke detectors or alarms, firefighting equipment's and air conditioners are easily possible for safety and better facilities.
- Flexibility of expansion, reuse and re-location.
- Dismantle and re-assemble easily without any cost loss.
- Dry construction, quick and easy to erect.

4. Conclusion

The purpose of design of every structure is somehow different like some serve as the cabin for a site supervisor and other as a residence for a labour working on site and some other as the shed to keep materials safe from atmospheric reactions.

There are numerous ways that can be chosen to transform a structure according to the type of transformation which is going to take place. It is concluded in this study that there are many number of combinations which can take place in transformable designs.

References

- [1] Space saving techniques by the use of transformable architecture by Raphael Reuter.
- [2] C. M. J. L. Lelieveld, A. I. M. Voorbij, W. A. Poelman, "Adaptable architecture."
- [3] Transformable Architecture Inspired by the Origami Art: Computer Visualization as a Tool for Form Exploration Katherine A. Liapi, University of Texas.
- [4] Waldo Galle, Frank De Troyer and Niels De Temmerman, "The strengths, weaknesses, opportunities and threats of Open and Transformable building related to its financial feasibility."
- [5] <https://www.scribbr.com/category/dissertation/>
- [6] Aishwarya Bharatkumar, "Flexible architecture," August 5, 2013.