

SPACE RECYCLING OF DETACHED HOUSES

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Concern over pollution and the environment has been a great issue in light of increasing population, increasing demand for natural resources, and the effects of high-tech industry. As society changes, building users will have changing space needs.

To reflect these issues, the concept of Sustainable Architecture has emerged. The approaches to Sustainable Architecture include "Green Architecture," "Ecological Architecture," "Environmental Architecture," and so forth. These approaches involve recycling energy, resources, construction materials, and the recycling of space.

Space recycling is better than new construction, if the physical life span of the building allows it. We can significantly reduce the amount of materials used and waste produced by new construction by extending the building life span through space recycling.

New construction usually happens when the physical life span has reached its limit or when an existing building cannot accommodate a new use. But even when building use conversion is possible, there are still many problems involving floor plan changes. If we consider these problems during the design process, we can improve the use of the space.

This study advocates recycling existing space as a method for minimizing the use/waste of building materials.

The expected benefits of this study are:

1. Economic: Space recycling can greatly reduce material costs.
2. Environmental: Space recycling minimizes physical waste, and reduces environmental damage.
3. Functional: Space recycling can promote functional adaptability if it is considered in the design process. It extends the life spans of buildings by providing the rooms required as a result of building use conversion.

The components of the study include:

1. A detailed examination of fixed and flexible elements of the detached house.
2. Case studies of building use conversions, both locally and abroad.
3. Examination of frequency and pattern of building use conversions in Taegu, South Korea.
4. Examination of trends in room conversion.

5. Suggestions of basic directions for space recycling design.

The number of building permits issued by Puk-gu-cheong¹ in Taegu was 1,476 in 1995, 550 in 1996, 313 by Oct. 1997, for a total of 2,339. The number of building use conversions was 132 in 1995, 48 in 1996, and 27 by Oct. 1997. On average, 8.9% of all building permits were issued for use conversion. The most frequent use conversion pattern was the conversion of detached houses.

Promoting the recycling of detached houses requires continuous study. The results of this investigation about trends and types of use conversion of detached houses are:

1. The most frequent use conversion pattern is the conversion of a detached house into a neighborhood facility.
2. Use conversions of detached houses to neighborhood facilities are of three types:
 - a. An entire detached house is converted (75%)
 - b. Part of a detached house is converted (13.9%)
 - c. A detached house combined with another use is converted (e.g., office + house converted to restaurant) (11.1%)
3. Use conversions of an entire detached house to a neighborhood facility are of six types:
 - a. From detached house to restaurant (40.8%)
 - b. From detached house to retail store (25.9%)
 - c. From detached house to office (18.5%)
 - d. From detached house to small educational institute (or training school) (7.4%)
 - e. From detached house to beauty salon (3.7%)
 - f. From detached house to Korean commercial singing establishment (i.e., karaoke) (3.7%)
4. The usual trends in room conversion from a detached house to neighborhood facility include:
 - a. The use of the original staircase and toilet without conversion.
 - b. The conversion of rooms such as living room, dining room, and bedroom into either a restaurant dining room, retail store display space, or office working space.

¹ The Northern district office in Taegu

Suggestions for basic directions in space recycling design are as follows:

1. Planning a monolithic structure. A monolithic structure makes it possible to change the space easily and to increase the flexibility of its use.
2. Placing the staircase, toilet, and utilities outside of the central floor plan or in the corner of the floor plan, which are to be designed in assembled form. These areas generally have been used without any conversion because of difficulties associated with installation. If the design placed them outside of the central floor plan or in the corner of the floor plan, they would be much easier to convert and repair.
3. Planning a living room with an entrance door, not just windows. If the living room is designed to have an entrance door, then there will be another entrance as well as the main entrance, making it more suitable for neighborhood facilities such as restaurants, retail stores, and offices to attract customers.
4. Designing the ceiling height of a detached house to have the same height in every area, leaving room for new future installations. The same ceiling height eliminates additional costs, when partitions are installed or removed. Extra room for ventilation ducts is also required in restaurants, for example.

According to this study, it is preferable, if the building structure allows, to convert the building instead of demolishing and rebuilding it. In addition, designs for new buildings should maximize the potential for future conversions.

In conclusion, designs for space recycling have positive effects on economic, environmental, and functional aspects. Moreover, space recycling is one way to realize sustainable architecture.

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