

# The Foundational Approach to The Modifiable Plan System of The Rural Standard House Models

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## 1 . Introduction

### 1. Backgrounds

#### (1) The Improvement of rural environment and the rural standard house models

The Korean farmers want their living environment to be improved, so as to fit in with the change of socio-economic state in a rural region. The Korean traditional rural houses are very old and are needed to be rebuilt into a modern style. But the rural residents don't have the systematized knowledge on house construction, the Korean government has made standard house models to help them. Particularly, the house models are researched and developed with the Saemaul Movement, the Korean modernization movement in rural and urban society, from the early 1970s. The rural houses and communities are really improved by the governmental supports - a loan, a subsidy, and a plan book of standard house models. Many people built their houses to be modern styles with the standard plans and lived in the house, and in a little while they complained about the disagreement of their house and their life style and habits. At that time, many experts insist that the standard plans aren't fit to the rural living pattern and local climate. Therefore the government stopped offering the plans of standard house models to farmers. Since then, there is no governmental intervention in the rural housing improvement, and the rural house can be improved according to users' intentions and abilities(Yoo, Bokhee, 1992)

However, the Rural Development Corporation(RDC) has offered the 34 plans of rural standard house 34 models to the rural residents from 1994 to 1997, in order to construct a new improved village(Munhwamaul) and occupants to build a new house, and now the RDC are researching and developing these house models. And the rural people have insisted the plans of rural standard house to help constructing their houses, because they have no knowledge about the construction of houses and have monetary and documentary difficulties. In addition, according to the survey on the necessity of the standard plans, 97.8% of the experienced the standard plans, need them to develop continually(Choi, Byoungsook, 1998).

#### (2) The modifiable methods on the standard layout of the rural house

The Rural Development Corporation has tried the to spread rural standard house models over the countries and has developed a software program to distribute the plans. This program is effectively

to manage the standard layout with a computer. When we used the program in computer, we could choose the plans, get printing outputs and arrange a selective floor plan on a house land registration map. However the program has a limitation, which a selected plan - floor plan and elevation plan - can not be modified. So the program is needed to reinforce the modifiable methods. Besides, 25.8% of the experienced the standard plans, have an opinion that the plans are easily modified by users' preferences and wants(Choi, Byoungsook, 1998).

## **2. The purpose**

This project is to develop the computer program on the modifying of the standard layout of the rural house, while corresponding to the standard house models of the RDC. It is supported by the Agricultural R&D Promotion Center and is planned to be researched for 3 years. This study, the first year, is to find the modifiable methods on the standard floor plan of the rural houses. Particularly this paper, a part of the first year study, is to present the basic results on the modifiable foundation and system of the standard floor plan.

## **II . Procedures**

This study is conducted by a mail questionnaire survey, a field survey method and a document review. We search for the practical use of the standard plans on the rural houses through a mail questionnaire survey, from the 21st February to the 28th April of 1998. Seven hundred questionnaires were sent to the users of the standard plans, and 95 questionnaires were received. The ratio of return was 13.6% and the data were statistically analyzed.

The present condition of rural houses was investigated by a field survey method. The survey was for a pilot study from September to October of 1998. We collected the rural house plans of recent constructing reports and interviewed with residents of Munhwamaul about the necessity of agricultural space in their houses. Also we collected the documentary data - the recent 47 house plans to be built and the reports - from Ewolmyoun, the use of standard plans on rural houses is the highest in Korean rural regions, in June, 1999. The data were qualitatively analyzed. To understand users' needs on rural houses and the conceptualization of modifiable houses, published and unpublished documents were reviewed.

## **III . The Assumption on the modification of the rural standard house model**

### **1. The concept on the modification of the standard layout**

The modifiable or flexible house means a way to be adjusted to a variety of occupants' lifestyles and values in present society. The house is changeable in a given condition according to the family life cycle, the family construction and the users' needs. In other words, the users can change their houses on the basis of house models. Generally the concept of the modifiable house is classified a

post-and a pre-occupancy. The post-occupancy modifiable house is defined as the change or rearrangement of housing spaces in accordance with the change of users' living patterns or users' needs after occupying their houses. The pre-occupancy modifiable house is changeable in order to fit the layout with the family construction and their needs in the process of house design(Lee, Hyunsoo, 1996).

We accepted the latter concept in this study. When the rural people build their houses on a basis of the standard plans of rural house models, the plans can be modified with the users' needs in drawing the house plan. The modifiable concept of rural standard house plans enables to change the floor plan, the elevation plan and the structural materials with the limitations by the variety of users' needs.

## 2. The users' needs and the basis of modifiable floor plans

The standard plans of rural houses have the qualitative superiority. They have developed corresponding to the preferences of rural people, who want their house to be newly built. But the people are numerous, and each person has the different housing values. So, when the people want to build their houses by using the standard plans, they want to represent their identity by their houses. Therefore the standard plans must be partly modifiable by the conditions of users.

Through the mail questionnaire survey, 77.0% of the respondents built their house by modifying the standard plans of rural houses. They modified the standard plans : an extension of room and an addition of rooms(30.9%), a change of space arrangement(20.6%), to be changed a roof form into a slab(19.1%), structure to be changed a prefab into a brick construction(13.2%) and others(16.2%). To relate these changes with the modification of floor plan, about 39% of respondents are needed to modify the standard floor plan : a extension of room and an addition of rooms(30.9%) or a change of space arrangement.

<table 1> The needs on the modification of rural houses

needs	dimension	space arrangement	comfortable housing environment
contents	<ul style="list-style-type: none"> <li>• Arbang, child rooms etc.</li> <li>• a livingroom a kitchen and a dining room</li> <li>• a toilet and a bathroom.</li> <li>• an entrance, a verandah, a utility room</li> </ul> <p>→a modifiable unit space to be large or additional</p>	<ul style="list-style-type: none"> <li>• a living room - a dining kitchen room</li> <li>• a kitchen - a utility room</li> <li>• a location of entrance</li> <li>• a location of bathroom</li> </ul> <p>→a modifiable space arrangement in order to be convenient life</p>	<ul style="list-style-type: none"> <li>• an outdoor storage space</li> <li>• a washing space after an agricultural work</li> <li>• an indoor storage space</li> <li>• an individual character : a study room, a work room, a skip floor</li> </ul> <p>→a modifiable element the individual needs</p>
the modifiable factors of floor plan	<ul style="list-style-type: none"> <li>• an extension or reduction of space</li> <li>• an addition or deletion of space : a toilet and a bathroom, an entrance, a verandah, a utility room</li> </ul>	<ul style="list-style-type: none"> <li>• a change of space location : a bathroom, an entrance, a utility room</li> <li>• an addition or deletion of partition wall</li> </ul>	<ul style="list-style-type: none"> <li>• an addition or deletion of fixtures : built-in storage space, a window or door, facilities of a bathroom</li> <li>• a change of fixtures or facilities location</li> <li>• a change of fixtures or facilities kind</li> <li>• a change of floor level</li> </ul>

The modifications of the standard plans must be based on the housing needs of rural people. We found out the needs by three kinds of research methods, and presented them in <table 1>. The residents' needs on the modification of a floor plan were classified into three parts. The first part of the needs was the dimension and size of room : a large or additional space. The second part of the needs was the convenient space arrangement or planning. The third was the individual needs to

be a comfortable housing environment, and particularly the need of outdoor storage space was reflected on the rural living characteristics.

Through the rural housing needs, we could define the modifiable factors of the standard floor plan as the extension or reduction of space, the addition or deletion of space, the change of space, the addition or deletion of partition wall, the addition or deletion of fixtures, the change of fixtures or facilities' location, the change of fixtures or facilities' kinds, the change of floor levels. But these factors should be corrected by continuous research : the needs of residents to live in the rural standard house models and change the houses, and the comparison of the rural standard house plan with the other house plan.

#### **IV . The modification of floor plans on the rural standard house models**

##### **1. The present conditions of floor plan construction on the rural houses**

From the rural standard house models<sup>1)</sup> and other rural houses<sup>2)</sup>, we analyzed the space construction on the floor plans. The first analysis factor was the dimension or size(area(pyoung), the number of bedrooms and bathrooms). The second factor was the location of the living room on the floor plan, the arrangement of the living room and the kitchen which were the public living spaces, the overall floor plan form related to the house shape. These factors were decided by the literature, the searching basis on the database of rural standard house models, and the researchers' experiences.

The floor plans of standard house models were mainly developed 20-25 pyoung with 3 bedrooms(37.9% of the 1st house models), and the houses in Ewolmyoun were built 30-35 pyoung with 3 bedrooms(69.8% of analyzed data). The finding show that the rural residents wanted a large house - the house size was over 30 pyoung. The basic spaces were 3 bedrooms+a living room+a dining kitchen+a bathroom+an entrance+a utility room in the rural standard house models and other houses. 27.9% of the houses in Ewolmyoun did not include a utility room. The living room was centered on the floor plan(86.2% of the 1st house models and 95.3% of the houses in Ewolmyoun). The arrangements of public living spaces - a living room and a dining kitchen - were classified into the open type and the closed type. In the rural standard 1st house models, the close type(51.7%) was a little more than the open type(48.3%). On the contrary the open type(67.4%) was much more in Ewolmyoun. About the overall floor plan forms<sup>3)</sup>, the simple type(69.0%) was much distributed in the rural standard 1st house models, and the jagged type(53.5%) - the variation of house form - was much preferred in the houses in Ewolmyoun.

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1) Because this study is to develop the modifiable system on the floor plan, we excepted 2nd floor house models. 29 of the rural standard house models were analyzed : 7 models to be developed in 1994, 17 models to be developed in 1995, 5 models to be developed in 1997.

2) We collected the recently built 47 houses plan in Ewolmyoun, except 4 data - the 2nd house form data or an incorrect data, 43 houses plans were analyzed

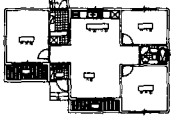

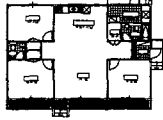
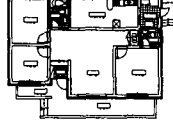
3) The overall floor plan forms were classified into a simple type, a letter of J type, a jagged type and a other type. The simple type was near to a rectangular form. The jagged type was like a concave and a convex on a plane.

## 2. The modifiable alternative directions on the floor plan of rural standard house models

The 1st standard house models were 29 types. The types of 25-35 pyoung with 3 bedrooms in them, were preferred by the rural users and were included 17 models(58.6%) of them. We tried to modify the floor plan from these 17 models.

In order to approach the modification of standard floor plan, the floor plan of 17 models were classified into 12 groups by the analysis factors of the space construction on the floor plans. We deleted the little preferred floor plans from 12 groups - a livingroom was located in corner and the overall floor plan form belonged to other type. Finally, the rural people preferred 7 groups in the rural standard house models. A prototype floor plan was selected from each of groups, and that was based on a simple floor plan. The prototypes were compared with the house plans of Ewolmyoun, and these plans were similar to 4 prototypes of floor plan on the rural standard house models. 37 of 43 houses in Ewolmyoun were built by the 4 protypes plans. Therefore these 4 prototypes were defined as the basic plans of modification, and the modifiable directions were presented in <table 2>. The directions were analyzed by the differences between the standard floor plans and the house plans of Ewolmyoun. We are studying the alternatives on the modifiable floor plans to be reflected on the modifiable directions.

<table 2> The modifiable alternative directions on the floor plan of rural standard house models

classification	prototype1	prototype2	prototype3	prototype4
the floor plan				
models	Nongjin-95-25-C	Nongjin-95-25-B	Nongjin-95-30-D	Nongjin-95-30-E
the houses in Ewolmyoun	22 houses were built from 37houses	2 houses were built from 37houses	3 houses were built from 37houses	10 houses were built from 37houses
the modifiable spaces	a utility room, an entrance, the 2nd bathroom, a living room-DK, bedrooms	an entrance, a utility room, a built-in storage space	a utility room, an entrance, a bathroom, the 2nd bathroom, bedrooms	a utility room, an entrance, a bathroom, the 2nd bathroom, bedrooms
the modifiable alternative directions on floor plan	<ul style="list-style-type: none"> <li>① a change location of a utilityroom and entrance</li> <li>② a utilityroom deletes+2nd bathroom adds+a location of entrance changes</li> <li>③ addition of 2nd bathroom</li> <li>④ a utilityroom deletes+bedrooms extends</li> <li>⑤ bedrooms adds+a livingroom-DK adjusts+a location of utilityroom adjusts</li> </ul> ※overall included an adjustment of size	<ul style="list-style-type: none"> <li>① a location of entrance changes</li> <li>② a location of utilityroom changes+a built-in storage space deletes</li> </ul> ※overall included an adjustment of size	<ul style="list-style-type: none"> <li>① 2nd bathroom deletes+a utilityroom extends+a storage space deletes</li> <li>② a location of entrance, bathroom and parents' room changes+a storage space deletes</li> </ul> ※overall included an adjustment of size	<ul style="list-style-type: none"> <li>① a location of bathroom changes</li> <li>② a location of bathroom and entrance changes</li> <li>③ bedrooms add</li> <li>④ 2nd bathroom deletes + bedrooms extends+a built-in storage space deletes</li> <li>⑤ bedrooms extends</li> </ul> ※overall included an adjustment of size

## V. Conclusion

The rural people preferred the standard house models of 25-30 pyoung with 3 bedrooms, but in reality the houses over 30 pyoung were more frequently found. The prototype 1 that a livingroom was centered, a livingroom-dining kitchen was arranged openly and an overall floor plan was formed jagged, was frequently built in the rural region. Through the differences between the rural standard

house plans and the house plans of Ewolmyoun, we could find the modifiable directions on 4 prototypes of the rural standard house plans, and could develop the modifiable alternations on 4 prototypes of them. This study needs to be continued to survey the house floor plans on the whole country and to generalize the modifiable directions of floor plans. Also the modifiable alternations are considered to connect the database of standard house models. Based on these procedures, it is expected that the computer system of searching, modifying and drawing house plans will be developed to be based on the rural standard house models and the modifiable alternations after 3 years.

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