

A FUNDAMENTAL STUDY ON IMPROVING PROCESS BY APPLYING CONSTRUCTION MANAGEMENT(CM) METHODS TO HOUSING RECONSTRUCTION PROJECTS

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ABSTRACT: Due to the construction union's inefficient manner of carrying out their construction projects, lot's of conflicts and arguments among the union members are happening, so the proper model of reconstruction and process at each level of projects are also being recognized as an important part of the industry. So I would like to present an ideal process model of home reconstruction industry. Here below I'm presenting the benefits of this model when its applied properly. Through the study of information gained from the survey of residents, benefits such as AHP, analysis of SPSS, reduced construction time, budget cut, etc. will be produced

Keywords: Reconstruction Management; Integrated Management; Proper Process Model

1. INTRODUCTION

1.1 Backgrounds and purposes of this study

Built Environment Renewal Development Act was in full operation in September 1st 2003 to systematically and efficiently improve the superannuated housing which was supplied in industrialization and urbanization process in massive scale since 1970s. However, in the process of propelling improvement project, there emerge troubles such as disputes, confrontations and project delay within the cooperative due to the lack of expertise among cooperative executives who are the project operators, and the absence of efficient decision-making system. On the surface, it seems that the system of project has been established by introducing improvement project management system, as a complement for the lack of expertise, in the complex housing improvement project process. However, in the planning process, the work area and methods of contract should be also considered primarily to make all the parts agree on the fact that they chose the right alternative with the least risk. In addition, construction manager should be included to complement the lack of expertise in reconstruction project. Also step-by step process model of reconstruction project is needed reconstruction project. Against the back drop, this study investigates the causes for frequent troubles in housing reconstruction projects, and examines the validity of

introducing construction management (CM) as a means of improvement. It also proposes integrated management process in housing reconstruction improvement project by introducing the merits of CM in the management process.

1.2 The scope and methods of this study

This study confines housing reconstruction project to the one in the Built Environment Renewal Development Act article 2, section 2, 'Da' item. The study investigates the major troubles in each phase, and analyzes the causes. It also proves the necessity and validity of CM by considering the characteristics of housing reconstruction project and building management methods, and proposes the improvement process to realize them.

2. THEORETICAL CONSIDERATION AND TROUBLES ON HOUSING RECONSTRUCTION IMPROVEMENT PROJECT

2.1 The concept of housing reconstruction project

Housing reconstruction project is defined as the project to improve the residential environment in the areas with good maintenance infrastructure and superannuated and inferior buildings under the current related law, Built Environment Renewal Development Act article 2, section 2 and 'Da' item.

2.2 The promotion process of housing reconstruction project

This study divides housing reconstruction project into four phases of Plan resolution, Pre-design, Construction and Settlement & completion.

Table 1. The promotion process of housing reconstruction project

Promotion	Life-cycle of reconstruction improvement project operation	
Plan resolution phase	Promotion committee	Cooperative establishment permit
Pre-design Phase	Project operation authorization	management & disposal permit
Construction phase	Starting evacuation	Completion & moving in
Settlement & completion phase	Dissolution permit	Notice of settlement & transfer

2.3 The troubles and the way of improvement in the process of housing reconstruction project

2.3.1 Major troubles in reconstruction improvement project

As decision making is a critical factor to the entire aspect of profit and loss in housing reconstruction project, the opportunity to make selective decision should be given to the project's main body by reviewing and delibe-

rating the constraints in propelling the project and setting sensible direction with experts in each related field.

2.3.2 Improvement method in each phase of housing reconstruction project

If project plan is established based upon professional knowledge with enough exchanges of opinions among cooperative members in the initial stage of project planning, the costs and construction term can be reduced. That is, by introducing PM or other construction management method and developing group decision model in its initial stage, errors in each phase can be minimized.

3. INTRODUCTION OF CONSTRUCTION PROJECT METHOD IN HOUSING RECONSTRUCTION PROJECT

3.1 The definition of improvement project management and construction project management

(1) Improvement project management

It means that the cooperative established by the existing owners becomes the main body of the project, and serves improvement project work as proxy or consultation work.

(2) Construction project management

It refers to executing some or entire management work such as planning, feasibility test, analysis, designing, procurement, contracting, construction management, appraisal and after care.

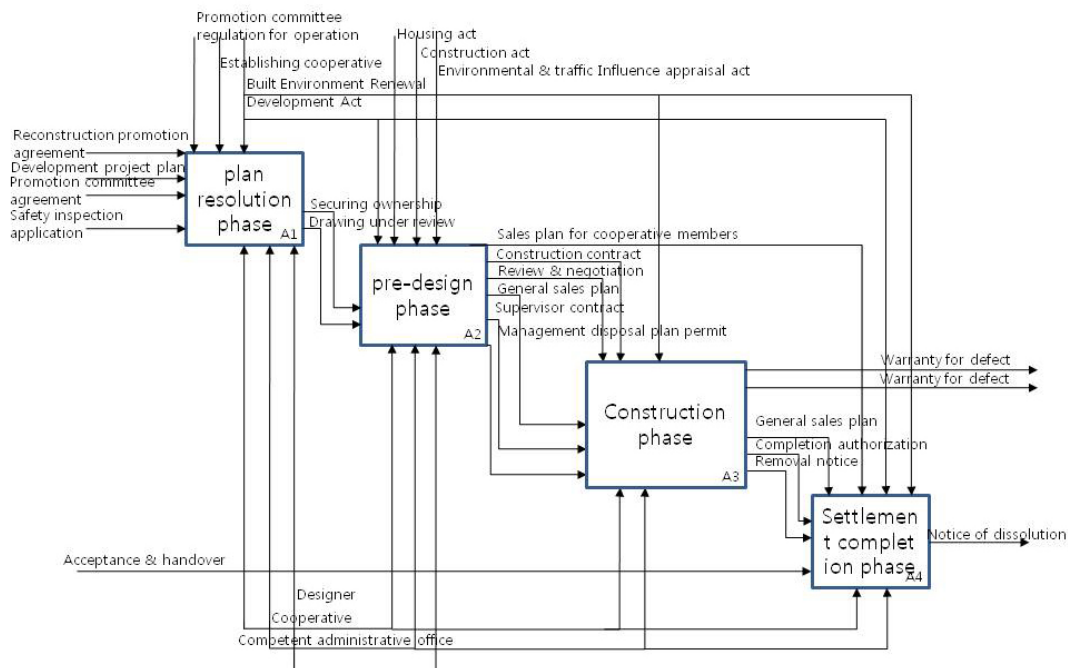


Fig 1. The existing process model of reconstruction improvement project

3.2 Improvement project management work in each phase, construction Supervision System and construction project management work

3.2.1 Improvement project management work

Improvement project management work includes serving the work on getting cooperative establishment consent and improvement project consent as proxy, applying for cooperative establishment authorization, reviewing business profitability and making improvement project construction plan, supporting designation of designer and constructor, applying for project operation permit as proxy, setting sales and management & disposal plan as proxy, reviewing construction drawings and changes in construction costs and doing works required by the cooperative.

3.2.3 Construction management work

(1) Plan resolution phase

Examining requisites in housing reconstruction improvement project for reconstruction resolution, examining practical and procedural requisites in construction resolution, examining design outline, cost sharing and profitability of newly built buildings

(2) Pre-design phase

Examining and comparing contracts, propriety of construction costs, cost estimation, quality and service items to select Design VE and superior constructor

(3) Construction phase

Serving construction management work when there are plans to change on costs, quality, and process after removal and starting construction.

(4) Settlement completion phase

Examining design drawings such as structure and facilities, construction details and finish quality and submitting use test application, doing works on financial audit, moving in, settlement, dissolution and sales.

4 APPLICATION OF CONSTRUCTION MANAGEMENT ON HOUSING RECONSTRUCTION PROJECT

4.1 The necessity of application of construction management on housing reconstruction project

To make the reconstruction project smooth, expert knowledge based upon various experiences, the ability to deal with practical work, transparency and fairness in the work process need to be secured. Construction management works in terms of expert knowledge include claim management, design and construction feasibility test, construction quality control, overall process, milestone management, cost estimation, and design change management. Construction management works in terms of practical capabilities include construction management planning, project and construction budget planning, cash flow planning, budget and real input management, and establishing project information management system. To make reconstruction project transparent and fair, construction management should be applied to it.

4.4 Troubles and countermeasures in application of CM on housing reconstruction project

Currently, the scope of improvement project works is confined in executing housing reconstruction project, which causes the lack of technology. Therefore, the registration standard for experts in each sector should be eased to enlarge work scope, and the complex theory and practical fundamentals of improvement project should be hardened systematically. It seems that this is the time for considering applying construction management to the complex interests of group order among civil projects, and for converting to sensible group decision making support model.

4.3 Effects of application of construction management on housing reconstruction project

4.3.1 Specializing the way of project operation

In the initial phase of improvement project, the ordering body can consider participation of construction manager from basic design stage to execution design stage. Examining economical efficiency of the design in CM system and applying value management will contribute to CM introduction and settlement including cost reduction, improvement project establishment, and securing transparency.

4.3.2 The expected effects

The success or failure of a construction project depends on the right decision making in its initial phase. The specialization of project operation methods applied by construction management is expected to contribute to reducing project duration and costs, ordering bodies' profitability in the initial stage of specialization.

5. THE METHOD OF ESTABLISHING CM PROCESS MODEL IN APPLICATION OF CONSTRUCTION MANAGEMENT ON HOUSING RECONSTRUCTION PROJECT

5.1 The necessity of CM process model based upon improvement project management

The role of management in some works including proper residential improvement management and construction manager in the initial phase of the project is one of the factors for success of housing reconstruction project

5.2 The basic notion of process model for improvement project management

Process model for improvement project management applied by CM methods in housing reconstruction project should be established, work manual on it should be written. This study used IDEF0 (Integration Definition for Function Modeling) to present the process. IDEF0 is the way of presentation clearly expressing is the way of presentation clearly expressing construction features by fragmenting process's works in the upper phase and forming them into subordinate phases.

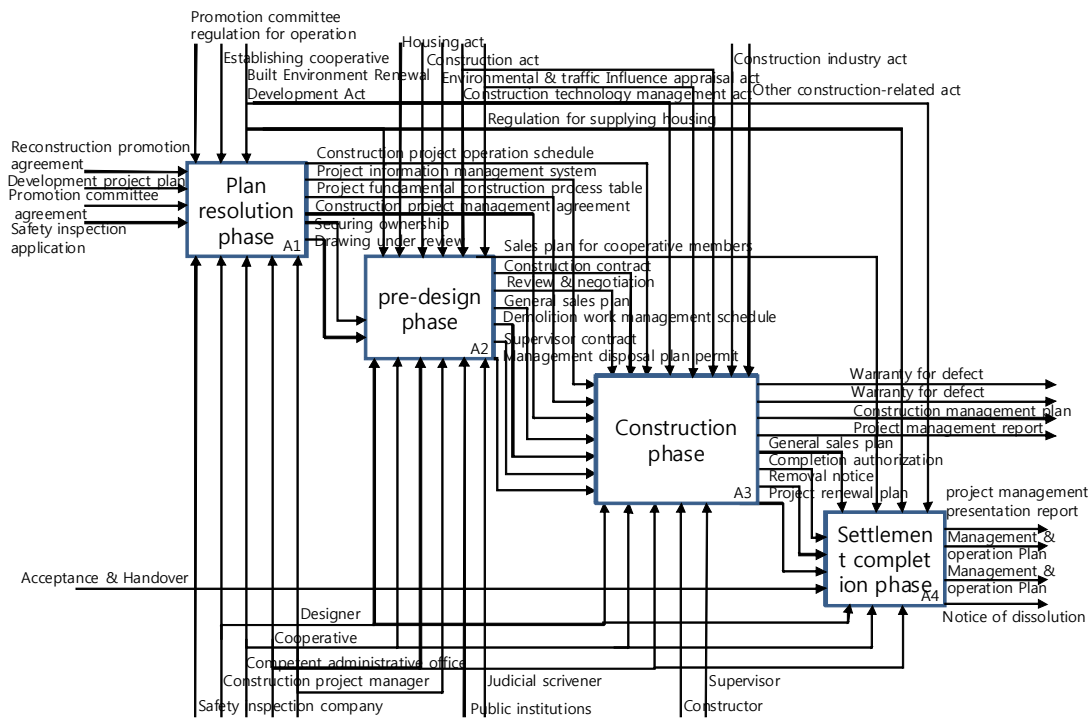


Fig 2. Reconstruction improvement project construction management process

5.3 The method of establishing CM process model and the expected effects

To propose housing improvement management process model, this study divided reconstruction management process into four phases of Plan resolution, Pre-design, Construction and Settlement & completion based upon work details in the previous chapter, and established process centered on improvement cooperative and construction manager. The highest process AO is presented the next figure 2. Specialization of project operation methods, sensible decision making in the initial stage, the reduction of project duration and costs and enhanced profitability of ordering bodies are expected. Particularly, applying value management in operation of housing reconstruction project will be effective in cost reduction, of improvement project process establishment and transparency by introducing and settling CM in the design phase.

6. CASE ANALYSIS AND SURVEYING RESULT ANALYSIS

6.1 The case of project application on SH apartment in Nonhyun-dong, Seoul, Korea

This study applies construction management methods to the business which completed contract on improvement management for case study. Project outline is presented in the next table 2.

6.2 The method of surveying

6.2.1 Surveying outline

This study surveyed technicians serving improvement project and members of the cooperative who ordered the

project separately.

6.2.2 The result analysis of the survey

(1) 104 individuals among 164 subjects answered the survey, and the collect rate of the survey was 63.4%

(2) The result of survey on work efficiency in each phase of the project applied by CM methods of housing reconstruction project and that of non-applied is presented as follows. The surveying outline is presented in the next table 3.

Table 2. Surveying outline

Division	Outline
Survey term	August 2008- September (for 30days)
Survey subject	Occupants(members of cooperative-74 household, executives-9 persons) Nonhyun-dong contract construction company (development- 2 persons, construction- 5 persons) Nonhyun-dong contract partner company (tax accounting 2 persons, legal affairs 2 persons, appraisal 2 persons) Nonhyun-dong improvement project management employees (improvement project 2 persons, CM 3 persons)

Table 3. Project outline

Division	Outline		
Location	Nonhyun-dong, Gangnam-gu, Seoul, Korea		
Regional district	Third-class general residential area, district unit planning zone		
Lot area	4,036.38 m ²		
The building-to-land ratio	22.42%		
Floor space index	236.50%		
Total floor area	13,222.17 m ²		
The number of layers	Two stories underground, 13 stories		
Total project period	January 2002~December 2007 (for five years)		
Promotion committee inauguration	January 2002		
The year of establishing cooperative	October 2002		
Project plan authorization	June 2003		
The date of the starting construction	February 2005		
The year of completion	February 2007		
The year of moving in	February~ April 2007		
Settlement completion	December 2007		
Structure	Ferroconcrete box frame structure		
The number of households per the types of area	94.69 m ²	106.26 m ²	125.69 m ²
	2	66	14

6.2.3 The result analysis of the survey

(1) 104 individuals among 164 subjects answered the survey, and the collect rate of the survey was 63.4%

(2) The result of survey on work efficiency in each phase of the project applied by CM methods of housing reconstruction project and that of non-applied is presented as follows.

7. ACKNOWLEDGEMENT

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8. CONCLUSIONS

This study proposed the direction for improvement by analyzing troubles in the process of existing housing reconstruction improvement project. The major conclusion of this study, basic research about establishing CM applied process with case study, is as follows.

This study proposed the direction for improvement by analyzing troubles in the process of existing housing reconstruction improvement project. The major conclusion of this study, basic research about establishing CM applied process with case study, is as follows.

(1) The main troubles of housing reconstruction project are

First, the lack of knowledge among improvement operators in the initial stage in a project.

Second, cooperative's improper judgment in decision making as the main body of the project.

(2) If applying process of CM functions equipped with expertise on construction project to housing reconstruction project, efficient communication, decision making and smooth project operation through sharing exact data and information can be attained.

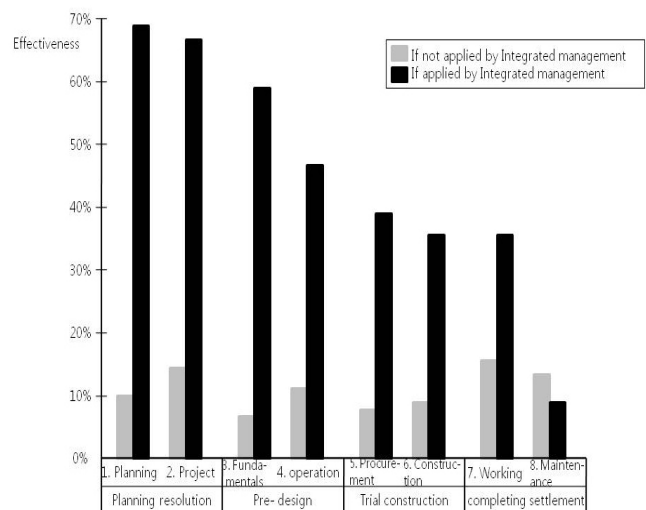


Fig 3. work efficiency in each phase

(3) Establishing process including CM functions in housing reconstruction improvement project contributes to building superior housing with reduced construction term and costs, rational decision making and systematic project management.

(4) As it is surveyed that the confidence toward improvement project manager is low, the image of improvement project management should be enhanced through CM method.

(5) The residents, main body of the project, showed high expectation toward process applied by CM method in each phase of the project. Active utilization of the process applied by CM method will help enhance the quality of reconstructed housing, and reduce the costs.

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