A Study on the Improvement of Construction Standard Specifications in Korea

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Abstract: Construction Standard Specifications, part of contract documents, has been improved through various amendments since their first enactment in 1967 up to the latest 2013 version. However, complaints about inconvenience and low availability have been continuously made in their structure and contents. Therefore, an improvement is needed based on the experts' opinions both from industrial and academic fields. This basic study is to compare the Korean specifications to those from the developed countries and derive the suggestions on their improvement. Furthermore, it aims to delve into the experts' opinion on the subject and identify the direction and priority for the improvement of the specifications. Through this study, user friendliness and efficiency are expected to be obtained in using the specifications.

Keywords: Standard Specification, Delphi Survey, Expert Group, Priorities of Improvement

I. INTRODUCTION

A. Research Background and Purpose

Construction Standard Specifications are part of contract documents defining the technical provisions about materials, methods, and relations of works. They were first enacted in 1967 and the latest version was amended in 2013. Earlier, specifications with specified specifications and guidance were used. Since these specifications became the origin of conflicts, the government sorted out the hierarchy and made it a rule to write project specifications based on the standard or specified specifications in 1998[3]. However, complaints about inconvenience and low availability have been made in their structure and contents. Therefore, an improvement is needed based on the opinions both from industrial and academic fields.

The purpose of this study is to benchmark the cases from the developed countries and derive the direction and priority for the improvement of the specifications.

B. Research Scope and Procedure

The scope of this study is the Construction Standard Specifications in Korea. The research procedure is,

1) to analyse the advanced specifications through preliminary research and derive the suggestions on the improvement. 2) to team up the expert group and conduct surveys on the improvement. 3) to draw the direction and priority on the improvement of specifications structure and contents by using Delphi method.

II. PRELIMINARY STUDY

A. Literature Review

Research on the matters in Korea has been focused on their structure, contents and general provisions especially from the early 1990s to the early 2000s. [2] sorted the American specifications according to their usage and explained their features. He derived the improvement suggestions by analyzing the guide specifications and the Korean standard specifications. [1] suggested the writing guidelines for contents according to the specifications hierarchy. Recently a suggestion on the improvement linking the material information about the environment-friendly construction [4]. Though these studies have proposed improvements by analysis and comparison, the objectivity through various methods to obtain opinions has not met the expectations. Therefore, a phased improvement strategy should be needed by collecting experts' opinions.

B. Benchmarking of Advanced Cases

The derived suggestions are as follows as a result of analyzing their structure, chapter organization, contents, operation and management, and availability from the specifications of the USA, the UK, Japan, and Hong Kong.

1) The writing and the management are mainly conducted by a group of experts who know the subtle technology and techniques thoroughly and keep up with the change of them, 2) The features of new technology and material are naturally emerged in the specifications, 3) Constant development and improvement based on the real industry fields, 4) Ability to secure expandability and practicality which is adaptable to large scale and complex construction projects, 5) Standard specifications are written centred on products and materials, 6) Structure can be easily adaptable to reflect each project's characteristics and contents, 7) Availability to construction sites by standardization of terminology and simplification of writing.

C. Delphi Survey

This study conducts expert survey to derive the

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The 6th International Conference on Construction Engineering and Project Management (ICCEPM 2015)
Oct. 11 (Sun) ~ 14 (Wed) 2015 • Paradise Hotel Busan • Busan, Korea
www.iccepm2015.org

direction and the priority on the specifications improvement. Because of the lack of expert on specifications, this study uses Delphi method known as an effective tool to adjust, collect and improve opinions of small group. Delphi method is a panel type survey method which is structuring the communication process to help the group deal with a complicated problem effectively [5]. Structuration of communication process collect the opinion by repetition of procedure, controlled feedback, anonymity, and statistic group response [5, 6, 7]. 3 to 4 times of survey are basically conducted to reach the agreements. First survey uses open questions to each individual without exchange of opinions. Second survey adopts closed questions based on the first survey. Third survey reveals the results of the previous surveys showing the median or average.

III. DERIVING IMPROVEMENT DIRECTION AND SETTING PRIORITIES FOR IMPROVEMENT

Among 19 members of the expert group, 15 have answered the survey. The survey has been done to the second steps among its planned three steps.

A. Improvement Direction

Improvement from the case study and the first open survey are as follows.

1) Setting a priority by analysing the emphasis and collecting the experts' opinions.

2) Selecting the parts behind the development and out of date and drawing the improvements

3) User friendly and object oriented

4) Adjusting similar, duplicated and conflicting parts

5) Standardizing the terminology

6) Reflecting the previous R&D results on the matters

7) Focusing on the basic matters first considering the research period and budget

B. Priorities for Improvement

The table 1 and 2 show the priority on improvement.

TABLE I
SPECIFICATIONS STRUCTURE IMPROVEMENT PRIORITY

Class	Contents	Key	Urgent
General	Changing to the guild spec structure	7	9
	Management group reconsidering	3	3
	Spec committee on each segment	1	1
	Amendment scope and period	4	4
Compose	Including every work step	9	9
Code and grouping	Code structure change to 6 digits(2+2+2) and referring to MasterFormat (USA)	5	6
	Including every material and method	14	11
	Secure code expandability	11	13
Conflict	Eliminating code conflicts with abroad	12	11
BIM	BIM and other tools compatibility	9	7
Specific	Sections on the specific work package	8	7
General rules	Improvements on general rules and standard requirements	2	1
relations	Connectivity between standard and specific specifications	5	5
Edit	Possibility to make them fascicles	12	14

TABLE II
SPECIFICATIONS CONTENTS IMPROVEMENT PRIORITY

Class	Contents	Key	Urgent
Terminology and expressions	Standardization of terminology	2	2
	Clearness of terminology (limit of authority and responsibility, clarity about the staff in charge)	1	1
	Avoid the ambiguous terminology	8	7
	Unity in sentence organization	15	13
	Limit the usage in terminology	18	18
	Objectivity in writing specifications	16	17
	Legitimacy in expressions	13	12
	Definition part in every section	13	11
Connectivity to KS	Connectivity to national standards such as Korean Standard	16	13
New technology and new material	State of the art technology	4	4
	Advanced technology	10	4
	Adjusting conflicts with design code	4	4
	Flexible usage in industrial standard	4	8
Sub process contents organization and consistency	Prototypes on each construction work by reorganizing the present structure	10	16
	Consistency in sub numbering system and the level of detail each chapter	12	13
	Unity in organizing chapters, sections	8	10
	Maintaining the level of explanation	4	9
Field connectivity	Guidance to keep the accessibility from the construction field or site	3	2

IV. CONCLUSION

This study is to improve the inconvenience and low availability in the structure and contents of Korean construction standard specifications. Advanced cases are benchmarked and the improvement direction and priority are drawn by the expert survey. User friendliness and efficiency are expected to be obtained in using the specifications.

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