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Analysis on the Problems of Construction Temporary Work through Review on Technology System

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Abstract: ***A construction temporary work is main process and importance trade section. A technology system of construction temporary has very low availability of field works and needs improvements in Korea as construction site has a quick response about new requirements. This study reviews literature researches and can verify that changes to a comprehensive technology system for construction site. In addition, it suggests a breakdown structure of new standards for temporary construction technology based on views of construction site managers. Meanwhile, temporary construction technology in Korea has changed with a specification of construction temporary work which had been revised in 2014. However, the revision is merely dividing the design and building off of construction temporary technology. It is lacking in many ways to change this in a new standard system for temporary construction technology. Henceforth, it needs to develop a standard system for temporary construction technology and a professional system that is appropriate for different purposes by detail trade sections.***

Keywords: Construction Temporary Work, Technology System, Standard Breakdown Structure, Construction Site

I. Introduction

A. Background

Construction temporary work is the main and core process for construction that set and use temporary lift equipment, combine a temporary office and warehouse, and also utilize a scaffold, form and shore which are used in various works while construction is progressing, and are torn down after construction is completed.[1] In the construction site, new machines and equipment are being adopted in the field of temporary work as many complicated and large-scale facilities have been constructed. Likewise, it is accelerating to adopt the new equipment and technology at the construction sites due to increasing amount of high-level and large-scale constructions[2]. In the academic field or standard technique system, however, the reality is the tardy correspondence or lack of a supporting system which considers the condition of the site. The temporary work specifications[3] has been revised under the Ministry of Land, Infrastructure and Transport in 2014 after 8 years[4]. Nevertheless, it has been limited since there has not been enough consideration to the various changes and conditions for construction sites. Therefore, it is necessary to improve and continuously supplement the temporary work as well as technical factors for it is the basic infrastructure within the construction field.

B. Purpose

This research has reviewed the concrete problems stated above and has sought the solution for improving the standard technology system and expanding the technical support reflecting construction site conditions. Through this practice, it is ultimately intended to develop construction temporary work in the future and to enhance the quality of construction work by improving construction management as well as to support securing safety. For these purposes, this study will conduct the literature reviews about the construction temporary work and the standard system as well as make a comparison of the composition system of the temporary work specifications before and after the revision.

II. Literature Review

A. Review on previous study

According to the previous study, which has pointed out the inadequate system of construction temporary work and technology, in the case of temporary work equipment, it is managed through the safety certification system to secure safety. However, even this system is not enough to specify the varied and massive temporary work equipment being produced as technologies have been developing in the field, and it can cause problems at the construction site when using the temporary work equipment that has lately been often used[5]. Thus, it is causing various problems due to the lack of a standard system for the temporary work and technology.

B. Review on current regulations

The basic regulations of Korean temporary work can be represented with the related specifications. The typical specifications which include the Temporary Work Standard Specification, the Construction Standard Specification, and among them, the Temporary Work Specification describes a wide range and in the most detail extensively about the construction[5]. When it came to the Temporary Work Standard Specification before the revision, it needed to be systematized considering the facts that it excluded civil complaints and environmental factors, or it excluded a temporary transfer equipment[5]. According to the previous study reviewing the overseas technology systems,

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it needs to be converted into a comprehensive system in order to enhance the utilization at construction sites and to systematize the temporary work technology[2]. In addition, a fundamental standardized system has to be established in advance to support the system.

Ⅱ. REVIEW ON STANDARD SPECIFICATION

A. Outline

In this research, the formation systems of the Temporary Work Specification from the Ministry of Construction and Transportation (below MCT) in 2006 and the Standard Specification from Ministry of Land, Infrastructure and Transportation (below MOLIT), revised in 2014, have been compared. The objects being compared are limited by the composition of the specifications from Level 1~2. Level 1 includes general rules and representative temporary work, such as 'Common Temporary Work', 'Form and Shore' and 'Scaffolds and Walk Plates', and Level 2 states specific temporary work belonging to Level 1. For example, it is composed of 'Form and Shore for Skyscrapers' and 'Form and Shore for Bridge Construction', which both belong to the 'Form and Shore' category. Meanwhile, the revised MOLIT (2014) described the temporary work as 2 aspects of design and construction.

B. Review on Field of Design

Upon examination of the design field of MOLIT(2014), it is remarkable that they added the few details found below to the previous MCT (2006) along with the design load and the transformation criteria. First, by adding the load combination and the structure analysis, it was supplemented to be able to design and review the temporary structure. Second, for the temporary civil facilities such as ground, foundations and bridges, availability is enhanced by adding pictures or formulas.
Even so, there were limitations, as follows: First, when considering the fact that temporary work should be progressed by integrating with the design and construction, MOLIT (2014) might intensify the confusion for its application at the site since they separated the design and construction. Second, despite all advantages stated above, it is a matter of the construction standards rather than the specifications.

C. Review on Field of Construction

After reviewing the design field above, the construction field is as follows:
First, the specifications of MOLIT (2014) have barely changed compared to MCT (2006).As the chart shows below, there was no improvement except for adding or adjusting some content.
Second, it is hard to say that the construction field of MOLIT (2014) has been improved compared to MCT (2006) since even the adjusted items did not have much difference in terms of the composition system.

TABLE Ⅱ
COMPARISON OF MCT(2006) AND MOLIT(2014)

MCT(2006)		MOLIT(2014)	
General rules	Common aspect	General rules	Common aspect
	Construction plan and management		Construction plan and management
	Material management		Material management
	Safety management		Safety management
	-		Environment management
	-		Equipment management for construction
Common temporary work	Temporary supply facility	Common temporary work	Temporary supply facility
	Temporary facility		Temporary facility
	Cofferdam		-
	Temporary bridge		-
Form and construction support	Common aspect	Form and construction support	Common aspect
	Form and construction support for high-rise building		Form and construction support for high-rise building and high-rise pylon
	Form and construction support for bridge		Form and construction support for bridge
	Form and construction support for architectural concrete		Form and construction support for architectural concrete
	Slip form		-
	Form and construction support for others		Form and construction support for others
Scaffolding and walk plate	General aspect	Scaffolding and walk plate	General aspect
	Scaffolding		Scaffolding
	Walk plate and work way		Walk plate and work way
Safety facility	General aspect	Safety facility	General aspect
	Material		Material
	Construction		Construction
Temporary retaining wall	General aspect	Temporary retaining wall	General aspect
	Material		Material
	Construction		Construction
Temporary bridge deck	General aspect	Temporary bridge and deck	General aspect
	Material		Material
	Construction		Construction

D. Implication

As a result of reviewing MOLIT (2014), it implies the following facts: To intensify the design field by improving the specifications was a good attempt, however, it should have approached it at the supportive level for construction. In addition, the fact that it barely improved in the construction field still remains a limitation.

Ⅳ. CONCLUSION

In this research, after investigating the problems which are caused by a lack of a technology system for construction work, the specifications of temporary work before and after the revision have been compared and reviewed as one of the alternatives to improve the problems.
Despite all the efforts of intensifying the design field compared to the previous one or that new technology sections have been included, still it proved that establishing a realistic and progressive system is required for construction-centered temporary work.

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