

A Study on the Management Measures Design Books System in the Maintenance Stage

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1. Introduction

The construction CALS (Continuous Acquisition & Life Cycle Support) standards apply mainly to the local national land management agencies, public corporations, and authorities under the control of the Ministry of Land, Infrastructure, and Transport (MOLIT). Moreover, although the private sector is determined to use IT in construction projects, it cannot properly invest in such IT development due to the uncertainty of applying it to the public sector. As such, motivation and guidance at the national level are required.

This study sought to research on measures designed to efficiently and systematically manage the information related to the major design drawings created at the maintenance management stage. Towards this end, the guidelines on the preparation of electronic design drawings and documents and on the delivery of products by construction category (road, river, harbor, etc.) were identified, and measures necessary for managing design drawings and documents at the maintenance management stage were presented. In so doing, the staffers responsible for maintenance management, through the improved drawing management system, can efficiently perform the maintenance management work and can systematically manage the construction information from the design to the maintenance management stages.

2. Relevant Researches

2.1 Analysis of the Overview and Work of the Management of Electronic Design Drawings and Documents

With the diffusion of construction CALS standards, various ordering agencies apply such standards in devising standards on the preparation and delivery of electronic design drawings and documents. Since January 2005, local national land management agencies have applied the guidelines on the preparation and delivery of electronic design drawings and documents (in the category of rivers and rivers). These guidelines have incorporated the implemented handbook on the preparation of electronic drawings (October 2004) and the handbook on the electronic delivery of design and completion documents (January 2005), thus adopting the standards on the preparation of electronic drawings, KOSDIC (Korea Standard of Product model data), and electronic document standards.

Since January 29, 2005, the guidelines on the preparation and delivery of electronic design drawings and documents have been applied to road and river construction projects implemented by local national land management agencies, and the number of target projects has reached 511. Surveys of projects that had been ordered since 2005 and that had been completed were conducted, revealing a 60% submission rate for the design and drawing documents. Of the projects whose relevant documents had been submitted, the projects that failed to comply with the guidelines accounted for 17% or 87 cases.

2.2 Overview of National Land Management Office's Management of Design Drawings and Documents

Regarding road and river construction projects ordered by local national land management offices, the design drawings and documents created in stages from design to construction execution are received and managed by the Construction Project Management System according to the guidelines on the preparation and delivery of electronic design drawings and documents. The National Land Management Office, which is responsible for maintaining general national roads, takes over the drawings of structures and the basic specifications of relevant facilities (bridges, tunnels, etc.) from the construction project management system, which interfaces with the facility maintenance system.

The basic information, which is currently being used by the National Land Management Office and which is managed in the facility maintenance management system, is key data as the information included in design drawings and documents to systematically construct the maintenance information and re-utilize the accumulated information, so it should be managed using an accurate, systematic, and consistent information management system. Thus, from the following two perspectives, management measures for maintenance design drawings and documents are required.

First, a system is needed by which the design drawings and documents delivered in the stages from design to construction execution can also be sufficiently utilized in the maintenance management stage.

Second, a system is also needed by which the information drawings and specifications, changed at the maintenance management stage, can be managed after construction execution.

3. Measures for the Management of Design Drawings and Documents at the Maintenance Stage

To be able to manage the drawing information by structure according to the drawing classification system, this study sought to efficiently manage the delivered finished construction outputs according to the guidelines on the preparation and delivery of the electronic design drawings and documents so as to present measures for the development of additional functions (register, retrieve, download, etc.) necessary for the management of drawings.

A function is needed by which to inquire about the information and comprehensively register drawings, according to the construction classification system, to construct a drawing management system. Also, measures for assessing the demand for system equipment are needed to calculate the capacity per facility in advance when uploading construction completion drawings managed by the staff in charge so as to prevent system operation problems.

Document-view-enabled files are among the most universal graphic image formats. They should be classified into kos, stp, and dwg files, which can view scanned files of black-and-white images, Tiff files used mainly for saving or transmission, and drawing files saved in the KOSDIC format, allowing the user to properly view drawings. In the case of the information on saved drawings, the user can download or retrieve the relevant drawing. Drawings on structures, to maintain the individual parts and members, can be enlarged or shrunk for a detailed view thereof, by providing the corresponding function.

When uploading drawings, as one facility has an average of 20-30 drawings, it will take the user 10-15 minutes to upload the drawings of one structure if they are uploaded one at a time. Thus, the corresponding function should be created not only to select multiple files but also to upload a folder itself, thus saving time. A function is needed to view documents (hwp, pdf, xls, ppt, etc.) along with the information on the drawings as in [Figure.1].

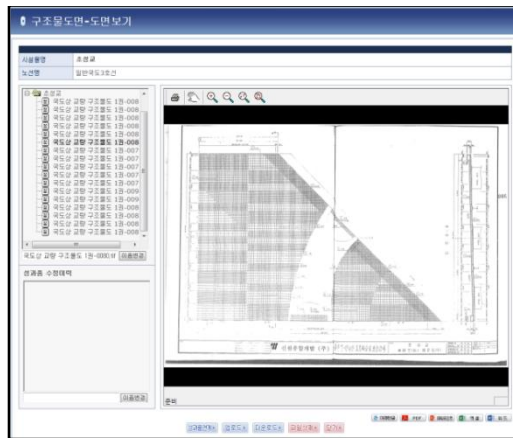


Figure 1. Screen of design drawings and documents management function

4. Conclusion

This study presented measures designed to efficiently and systematically manage the major information related to design drawings and documents created in the maintenance management stage. In doing so, the information created across the construction stages can be re-utilized, and the history of the information on the facilities that had been changed after the completion of the construction can be effectively managed. Through the accumulation of construction works along with the information on the drawings contained in the outputs and the information on the specifications, facilities can be smoothly maintained, and objective data necessary for prioritizing repair and reinforcement can be supported, thus saving on the maintenance costs supporting the responsible staff's maintenance management work efficiently.

5. References

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