IMPROVEMENT OF CONSTRUCTION CIVIL AFFAIRS ADMINISTRATION SYSTEM(CCAS)
: FOCUSING ON ADMINISTRATION FOR ROAD OCCUPATION PERMIT

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ABSTRACT : The Ministry of Construction & Transportation(MOCT) in Korea handles electronically 38 kinds of approval and permit operations under the Construction Civil Affairs Administration System(CCAS) so that applicants may apply for construction permits with ease and concerned public offices may process effectively civil applications. In particular, road occupation permit operations have several problems to be improved. This study is aimed to improve the CCAS in terms of simplification of application receipt, issuance of online permit, auto calculation of road occupation fee, and auto issuance of payment notice.

Key words : *CCAS, Construction permit, Civil application, Road occupation permit*

1. INTRODUCTION

There are a lot of operations about approval and permit for construction businesses and their contents are very complicated. Even though some applicants are experienced about these operations, they are often confused with respect to presentation of documents necessary for meeting requirements for construction permits and frequently asked to complement documentation.[1]

That is why the Ministry of Construction & Transportation(MOCT) has developed and operated the CCAS designed to apply for construction permits with ease and process effectively civil applications. Regional Construction Management Office(RCMO) and Highway Maintenance and Construction Service(HMCS) take responsibilities for handling 38 kinds of civil applications associated with civil construction that civilians make via online and offline. Among these operations, road occupation permit is recognized as the most tricky job by concerned public servants.

Accordingly, this study has proposed improvements through a string of interviews with concerned public officers at 6 RCMOs and 18 HMCSs while operating the system beginning October 2003 and has improved the system by selecting 4 issues with relatively high importance.

The study covers road occupation permits and targets concerned public officers at the MOCT-affiliated RCMO and HMCS.

2. CCAS

The CCAS allows civilians to apply for construction permits through communication networks and to receive notices of results automatically.

The CCAS was developed on March 2000 in order to process electronically the operations about construction permits for which the MOCT-affiliated RCMO and HMCS are responsible. The capability of the system was then updated through trial operations and improvements of its function, and it has been fully used in accordance with the directives of the MOCT on October 2003. The system handles a total of 38 kinds of operations including road occupation permit and riverside occupation permit.

2.1 System Overview

The CCAS consists of the applicant's system (www.cpermit.go.kr), document relay system, and administration's system(Fig. 1). Applicant's system enables to inquire information associated with construction permits such as how to prepare written applications over the Internet, application processing procedures, institutions in charge, commissions, and pertinent laws and rules. After inquiring essential information, users make out their applications to which required documents are attached, transmit them to the administration, and inquire results on a real time basis.

Document relay system is designed to send and receive electronic documents between applicants and the administration, create logs related to sending and receiving, manage concerned information and track status of the process. It also prevents forgery of documents by encoding and decoding electronic documents and provides information for analysis and statistics.

Administration's system is to receive applicants from civilians and process a series of operations until issuance of permits. In addition, it prepares and manages permit ledgers including road occupation permit ledger and quality inspection institute registry and may have consultations with outside institutions, if necessary.[2]
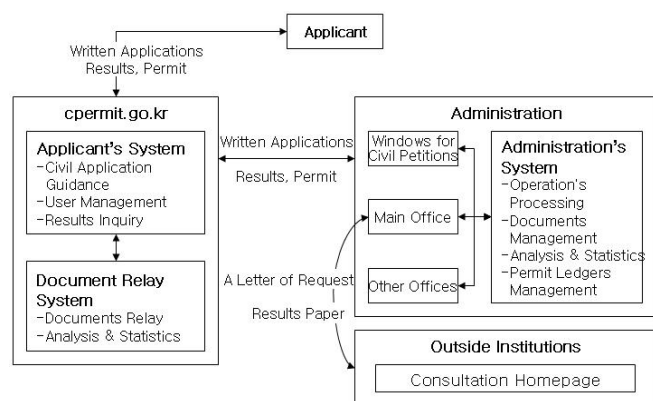

Fig. 1. Conceptual Scheme of CCAS

2.2 Road Occupation Permit

Article 40 of the Road Law states that "anyone who wants to occupy a road for the purpose of constructing, improving, or removing structures, objects, or facilities within the confine shall be permitted by the public office responsible for managing the road." The applicants for road occupation permits are normally made to build a gas station beside a road, or lay communication lines underground and erect communication poles.

An application is processed in the following order.
a. Submission of a written application and other required documents to the administration
b. Designation of responsible officers to handle the application after receipt
c. On-site inspection and technical review
d. Consultations with other offices
e. Consultations with outside institutions like the fire department and the police(c, d, and e conducted simultaneously)
f. Issuance of permit (if lawful)
g. Preparation of permit ledger
h. Imposition of road occupation fee every March

Road occupation permits account for 5,893 (91.3%) of a total of 6,457 construction permits handled by the MOCT from January 1 to July 31, 2005.

3. CURRENT ISSUE

Since October 2003, we have gathered the following opinions on system improvements from public officers using the CCAS.

First, concerned public offices write details of applications for road occupation permits on both the CCAS and the Bulletin Board of the MOCT homepage when they receive these applications. Writing them on the CCAS is to facilitate operations, while writing them on the MOCT's homepage is to inform applicants of the extent of progress

on a real time basis. Therefore, it is needed to write these details on either of the two.

Second, individual permits are normally issued if reasons of applications are deemed lawful as the result of on-site inspection and technical review. Though permits may be prepared with official seals stamped after being printed from the system, applicants must visit public offices in person or public officers must mail them to applicants in order to actually receive permits. To remove this inconvenience, it is required that applicants can print permits in person through the system equipped with the unit for preventing forgery of documents.

Third, road occupation fees paid by occupiers are calculated with based on declared land prices. Accordingly, public officers have to enter data on declared land prices received from concerned local governments, and it normally takes about 3 months to calculate road occupation fees. So it is required to make declared land prices automatically reflected on the CCAS.

At last, these public officers in charge of road occupation permits at RCMO and HMCS issue payment notices by using the National Finance Information System(NAFIS) established by the Ministry of Finance and Economy(MOFE) after calculating road occupation fees with the help of the CCAS. This means that they must enter once again information on payment notices into the NAFIS. Since these fees must be imposed until the end of every March, the number of payment notices to be entered into the NAFIS reaches approximately 2,000, which arouses inconvenience on the side of public officers.

4. SYSTEM IMPROVEMENT

We propose several ways to resolve these problems on the system.

4.1 Linkage to MOCT's Homepage

We have details of receipts of permit applications written on the ledger of the CCAS and related operations transmitted to the MOCT's homepage on a real time basis. The Http protocol-based linkage makes it possible to call Servlet(Server Side Applet) for data receipt that is located on the web-server of the MOCT homepage and transmit data once received applications are input on the CCAS(Fig. 2).
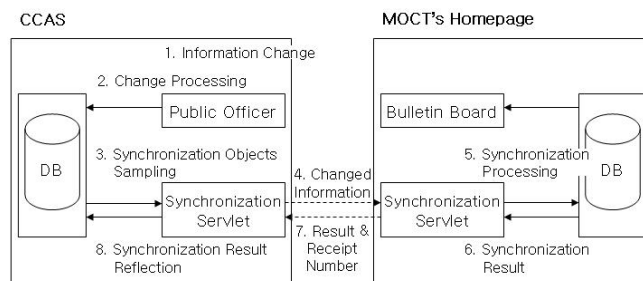

Fig. 2. Linkage to MOCT's Momepage

4.2 Issuance of Online Permit

Several hundreds of million Korean Won is required to develop a program enabling to issue online permits from the

CCAS. During June 2005, 373 permits were made among a total of 932 applications. Return on investment for the development is not seen as favorable because this task has been less frequently done than resident ID card operation issuing several tens of thousands cards. For this reason, we use the Shared Services of G4C project initiated by the Ministry of Government Administration and Home Affairs(MOGAHA).

Shared Services mean public services with support functions to be used commonly for many public offices through an integrated center and contain the followings.[3]
. Single Sign On (SSO) System
. User Directory System
. Civil Application Guidance System
. Civil Application Online Issuance System
. Electronic Form System
. Electronic Billing System

The online permit issuance system is aimed to provide services through common use of G4C's support system. Entrusting permit issuance services provision to G4C will alleviate burdens of concerned public offices and cut costs required for system development and operation.

Permits made out by the CCAS are transmitted to the online permit issuance system and then transmitted again to the CCAS after measure to prevent forgery of documents are taken. As XML data must be sent and received through web services, the system was developed under the environment where it is possible to send and receive TCP/IP-based SOAP(Simple Object Access Protocol) messages. Then applicants can print permits after going through ID authentication at the CCAS(Fig. 3).
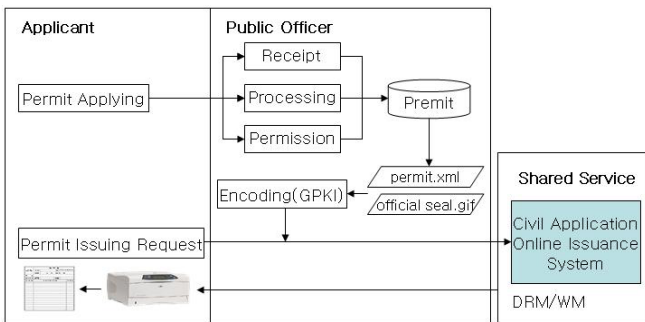

Fig. 3. Process of Permit Issuance

4.3 Auto Reflection of the Declared Land Price

In order to reflect automatically declared land prices on the CCAS, we transferred DB on declared land prices held by the MOCT's Land Valuation System Division to the servers of 6 RCMOs.

To make lot codes of DB on declared land prices equivalent to those on the CCAS, we updated the lot code table on the road occupation permit ledgers for each of servers of these RCMOs. In addition, we divided the gathered text files on declared land prices into 6 areas on which the 6 RCMOs have jurisdictions. SQL*Loader was used for the Table(LAND_VALUE_T) for declared land prices. The following shows a control file used in SQL*Loader.

```
load data
infile '/sps1/cwp/gongji/CO49.TXT'
append
into table land_value_t
( std_yy constant '2004',
lot_no position(01:19) char,
region_cd position(01:10) char,
pilji_gbn position(11:11) char,
bunji1 position(12:15) char,
bunji2 position(16:19) char,
land_value position(21:32) decimal external)
```

4.4 Auto Issuance of Road Occupation Fee Notice

Two systems must be linked each other with the use of EAI(Enterprise Application Integration) solution so as to transmit information on payment notices from the CCAS to the NAFIS. However, as it takes considerable expenses to mount EAI solution on the system, this study has files automatically uploaded on the NAFIS after creating files and delivering them to NAFIS administrators. So it is required to have information flow on a real time basis by applying EAI solution for complete linkage between the CCAS and the NAFIS.

The linkage process of the improved system is as follow.[4]
. Create the table (LDA010_NAFIS_T) for the details of imposition of road occupation fee after calculating the fee and conducting its determination.
. Enter associated information such as field office code and NAFIS staff ID in order to create NAFIS files(Fig. 4).
. Once the preparation for creating NAFIS files is complete, enter the payment date and create NAFIS files(Fig. 5). And the road occupation fee notices will be issued collectively after these files are transmitted to NAFIS operators at the MOFE.
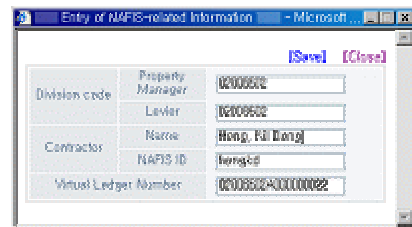

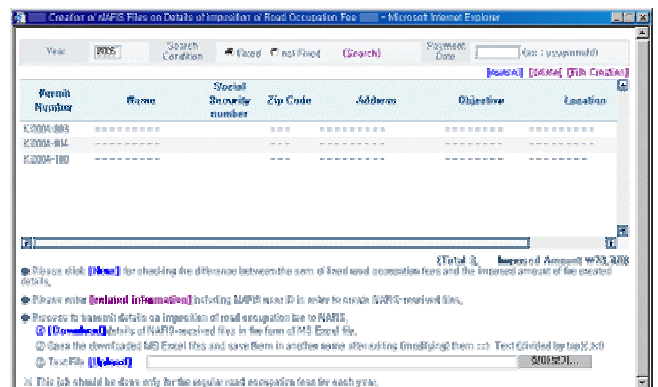**Fig. 4.** Entry of NAFIS-related Information

Fig. 5. Creation of NAFIS Files on Details of Imposition of Road Occupation Fee

5. CONCLUSION

As these operations associated with road occupation permits made by RCMO and HMCS are complex, responsible public officers have complained their troubles. Under this context, we improved the CCAS by considering their demands. Main contents are as follow.

First, under the MOCT's directives obliging public officers to inform applicants of how their applications are processed through the MOCT's homepage on a real time basis, public officers have to enter data into both the CCAS and the homepage. This situation has brought inconvenience and we improve it.

Second, we make it possible to send online permits to applicants unlike the existing system just allowing issuance of handwritten permits.

Third, auto-reflection of DB on declared land prices contributes to cutting the time for calculating road occupation fees.

Lastly, we make it possible to issue payment notices automatically with being linked to the NAFIS.

System users can reduce sharply their workloads on road occupation permits through the system improvements by the study. In particular, it is expected to reduce the period for road occupation fee imposition from more-than-one month to within 3 days.

In the long term, we need to further improve the system to the extent that a series of operations including permit issuance, calculation of road occupation fees, and issuance of payment notices are all automated only with writing on permit ledgers, and to expand system users toward local governments.

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