VI-241   Procedure of The Civil Engineering Information System

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1. INTRODUCTION

We presented the summary of our Civil Engineering Information System at the last annual conference. We were only storing Data Base (DB) at that time.

In the initial stages, DB was not enough, we had to decide to use this system for our company's engineers. We intended to get more information by showing the usefule points.

This manuscript describes the procedures of this system.

2. HOW TO USE IN THE INITIAL STAGES

The site office is most important for the source of information, therefor the purpose and the effect for site engineers should be showed. The definite purposes for site engineers are : ①Support and saving labor of site works in order to make up the shortage of site engineers, ②Total improvement of technical ability.

In the initial stages, it is more effective to limit usage. These items are; ① Contents of registration, ②Contents of supply, ③ Users, ④ Chance of use.
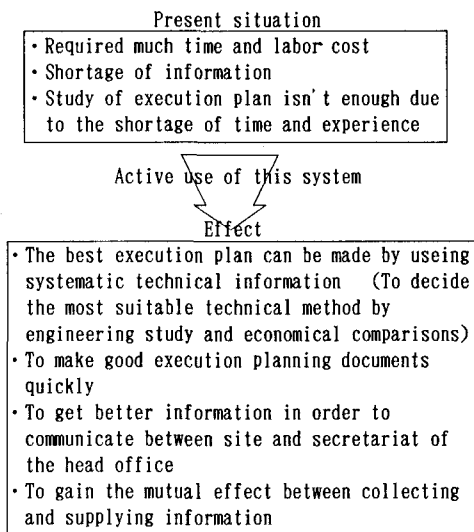
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              Present situation
┌─────────────────────────────────────────┐
│· Required much time and labor cost        │
│· Shortage of information                  │
│· Study of execution plan isn't enough due │
│  to the shortage of time and experience   │
└─────────────────────────────────────────┘

         Active use of this system

                   Effect
┌─────────────────────────────────────────────┐
│· The best execution plan can be made by useing│
│  systematic technical information  (To decide │
│  the most suitable technical method by        │
│  engineering study and economical comparisons)│
│· To make good execution planning documents    │
│  quickly                                      │
│· To get better information in order to        │
│  communicate between site and secretariat of  │
│  the head office                              │
│· To gain the mutual effect between collecting │
│  and supplying information                    │
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Fig.-1 An example of a concrete effect when an execution plan will be studied

Fig.-1 shows an example of a concrete effectiveness when an excution plan is studied.

3. COLLECTING AND PUTTING ON RECORD

1)DB of REGULAR FORM and IRREGULAR FORM

We have been building this system under the condition that it should correspond with the size of our company.

It has been proceeding with two kinds of DB. One is the "REGULAR FORM" type. This form and items of investigation are fixed. The other is the " IRREGULAR FORM" . These existing datas are put on record just as untouched forms.

The tool for this system is an ELECTORONIC FILING TOOL(EFT). This tool contributes to storing DB of " IRREGULAR FORMS " . It was decided to describe the following items in a COMPLETED PROJECT REPORT as one of the "REGULAR FORM" DB's.

① Outline of the project and Key-word, ② Process of the construction, ③ Condtion of the construction ; Geographical features and Weather, Geological features and Nature of the soil, Surroundings of the neighborhood, ④ In the case of a special technic or engineering method ; The name, Reasons for useing this method, Names of the machines, Process, Problems and solutions.

At the same time, A manual for writing a COMPLETED PROJECT REPORT was distributed, so that writing rules and vocabularies are standardized in order to make classification and indexing easy.

Table-1 Requested items for outline of construcron

ITEM	REQUESTED INFOMATION
Sewer line	Diameter, Maximum span length Total length
Water line	Diameter, Total Length
Tunnel	Size of section, Length
Dam	Height and Length of bank
Bridge	Width, Span length, Total length
Road	Width, Total length
Land creation	Developed area, Volume of moved soil

For example, Table-1 shows the items which must be fully explained in the outline of the project.

2) Time for registration or reference

The number of DB as of March 1,1993 is
① INSIDE INFORMATION of our company ;
　　── 6,400 pieces (96,500 pages)
② OUTSIDE INFORMATION of our company ;
　　── 2,100 pieces (7,600 pages)

The registration work has been done by one EFT and one operator. It took about 3,360 hours. The use situation of EFT is shown in Table-2.

Table-2 The use situation of EFT

Average working time	6 ° 27′ /day
Operator A	5 ° 00′ /day/man
Operator B (assistant)	1 ° 27′ /day/man
Registration	3 ° 34′ /day
Num. of registered document	13.3 pieces/day
Num. of registered pages	256 pages/day
Time of registering a page	50 sec / page
Reference	58 min/day
231 times for reference	53 min/time
Others	
Amendment, Printig, etc.	1 ° 55′ /day
Average pages for reference	31 pages/time
Name of tool : Fujitsu EFS80 V13	
July,1992 ～ Feb,1993　(147 Working days)	

The Operating time of the EFT is short because it's necessary to have a regular rest due to computer screen monitoring. In order to increase the operating time, it's better that two operaters are used for this task.

4. SUPPLY OF THE INFORMATION TO USERS

1) The route of supply

The access from users should be various. Some requests might be unfit for this system. It was decided that all requests should be screened first by the information chiefs who are well aware of the level of this system's ability. The procedure of requests are as follows :
① They request to the information chief orally or by telephon with the following explanation ; Objects of the request, Extents and/or contents of request, Information for reference, ways of communication (FAX, post, etc.)② The information chief sends the written request to the secretariat of the head office by FAX.,
③ The data is then sent to the site engineers directly, ④The engineers have to report if this information is useful or not to the information chief after they received them.

2) Actual supplied information

This system was opened for site engineers in July, 1992. The number of requests were 231 times for 147 working days. The rate of successful responses were 82 ％. Table-3 shows the supply situation of this system.

Table-3 Suuply situation

	Item	piece
INSIDE	(1) Execution plan	76 (8)
	(2) Details of engineering	81(20)
	(3) Table of past record	16 (3)
	(4) BASIC DATA	25 (4)
OUTSIDE	(5) Outline of engineering	6 (2)
	(6) Publications of government	1
	(7) Info. from various societies	14 (2)
	(8) Etc.	12 (3)
	Total	231(42)
( )is the num. of unsuccessful responses.		
Rate of successful responses is 81.8 ％.		

The items of unsuccessful responses were :
① Unfitting for this system ; 5 pieces,
② Nothing more detailed ; 18 pieces ,
③ Nothing in our company's record ; 6 pieces,
④ Nothing in this system ; 13 pieces,

Regarding ①, the rate of satisfaction of users is low including the successful responses. It might be necessary to study the standardization of DB's.

As for② and③, this would be improved gradually by accumulating DB.

5. CONCLUSION

The most troublesome worry before opening this system was if it would be possible to respond to any request from various accessed users. According to this small investigation, the percentage of successful responses were 81.8 ％. This point should be noted, even after the information chief screened the requests.

REFERENCE

T.Ohonuma, T.Kozawa, S.Shimonishi ; Some Problems on Working of Civil Engineering Information System, Papers on 10th Conf. of Construction Management Study pp133 ～pp138 , 1992