

BASIC RESEARCH FOR BUILDING EDUCATIONAL FACILITY MAINTENANCE PROCESS - FOCUSING ON DAEJEON METROPOLITAN CITY -

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ABSTRACT : At this point of time that it is required to improve educational environment and the function of educational facilities as well as interests on educational facility business is increasing, it is actual situation that unsystematic maintenance of educational facility is not being able to cope with the change caused by introducing the 7th curriculum. Also, in spite of enormous career in maintenance work, the function is not properly performed because of unsystematic management. In case of educational facility manager, he parallels performing general administrative work and facilities maintenance work not as a maintenance expert but as a member of administration office. So there are difficulties in performing maintenance work, and systematic maintenance work cannot be expected because of lacking maintenance manual. Therefore, in this research, I would like to investigate and analyze the status of educational facilities and to elicit the point of issue as a basic research to save maintenance expenses and to make pleasant educational environment.

Key words : Educational facility, Maintenance, Repair.

1. INTRODUCTION

1.1 Background and purpose of research

Since the 7th curriculum was introduced, change of use and complements for educational facilities have been performed to satisfy the increasing demands on educational environment and functional desire. Educational facility is the most important element to achieve the purpose and goal of school education smoothly. However, it is actual situation that normal maintenance is not done because of lacking special knowledge and budget, even though systematic maintenance fit to each function should be done to cope with the specialized educational facility.¹

In educational facility, safety should be ahead of anything because it is a space that lots of students spend

their time a lot. Defect should be minimized through checking facilities in advance, and maintenance should be smoothly performed by early discovery of defect and proper disposal. However, budget used to be requested to Office of Education only when repair should be done in large scale. So it is hard to perform maintenance on time and to make maintenance plan for prevention. Also, the lack of special knowledge of facility manager and absence of maintenance instruction can be the main cause of raising the frequency of demand to repair and accelerating aging.

Therefore, in this research, we would like to elicit issue by analyzing maintenance process that is currently performed centering on educational facilities and to suggest solutions to improve it.

1.2 Range and method of research

In this research, we would like to elicit problem by analyzing maintenance work through interview educational facility managers or documentary survey centering on middle and high schools in Daejeon, and to search effective maintenance process and the system solution for educational facilities.

¹⁾ Lee Gye-In, Study on facility maintenance system improvement in elementary and middle school, Thesis collection of Architectural Institute of Korea, Vol.12, No.10, 1996.10

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Object of interview: Facility manager in administration office on each middle and high school
 Time of interview: Jun. ~ Jul. 16, 2005
 Interview type: one to one interview

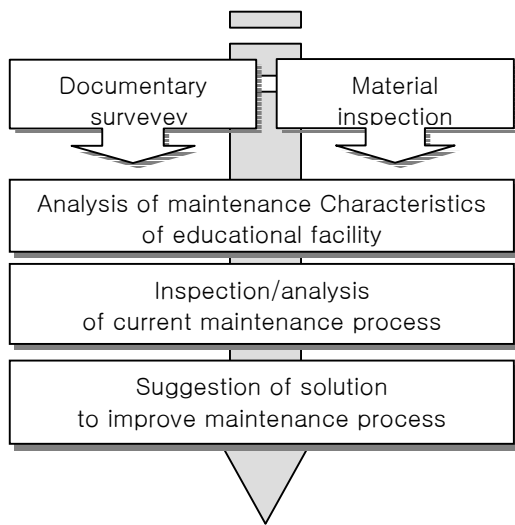


Fig. 1-1 연구의 방법

2. THEORETICAL STUDY ABOUT MAINTENANCE

2.1 Definition of maintenance

Maintenance is defined as “action to preserve economical efficiency and productivity of facility through improvement, repair, and reinforcement and to return wasted facility to its original state”.² In the maintenance work performed during the life cycle of facility, there is daily maintenance, regular maintenance that is performed every quarter and half term, and required maintenance that is done by request from user.

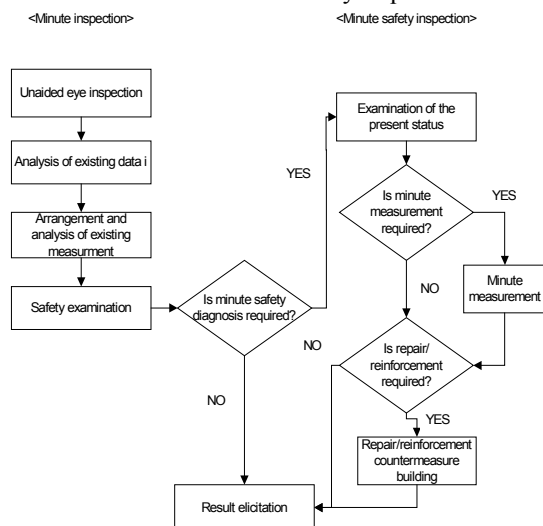


Fig. 2-1 Flow chart of facility inspection and diagnosis

As the <Fig. 2-1> above, inspection work in maintenance is recognized as an important work in the prevention and preservation. The kinds of inspection are inspection on demand to find out defect or damage of facility in advance through unaided eyes, daily inspection to record status degree by damage judgment standard, and regular inspection that is performed more than once in a half year. Also, there are emergency inspection in case of storm or disaster and minute safety diagnosis for facility that is considered to secure the safety from the result of inspection by facility manager.

2.2 Proper time of repair

The basic function such as durability, stability and functionality of facility is drop as time goes by, and facilities become to unable show their own function because of defect in each part. So, to keep the function of facility, durability should be raised and repair should be done in an appropriate time.³ Therefore, when some time goes by, repair and large-scale repair are required for building, and the life span should be extended and ageing should be solved through remodeling, before it reaches to a useless condition. If making it to a map, it is as <Fig. 2-2> below.⁴

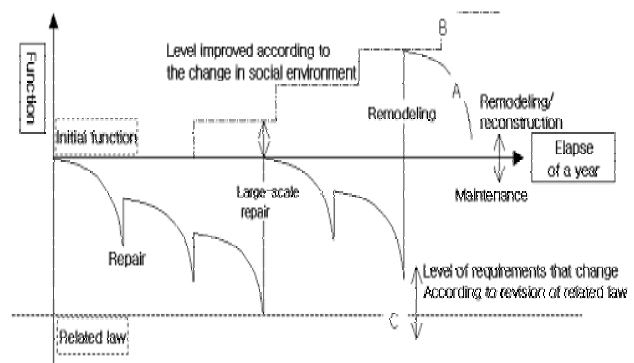


Fig. 2-2 Change of function in the aspect of building's life cycle

A is keeping the function of facility through repair, large-scale repair, and appropriate remodeling when the function drops, and B is showing the level of user's requirements on facility that are increasing according to elapse of a year. C means that the level of requirement changes according to revision of related law.

2.3 Type of facility life span

Daejeon Metropolitan City distributed “Educational Facility Maintenance Guidebook” to Office of Education for efficient educational facility maintenance. It is to lead

² Park Tae-Keun, Study on status control of multi-family house and diagnosis & management system development, 2002

³ Lee Ki-Bae, ‘Study on Seoul multi-family house maintenance’, thesis for master’s degree, Architectural Engineering Department, Graduate school of industry, The University of Seoul, 1998

⁴ Lee Chun-Gyeong, Study on repair and long-term repair history management and the improvement plan for leased apartment, Mokwon University, thesis for master’s degree, 2003

systematic and reasonable maintenance work of facility manager in the Office of Education.

Table 2-1 shows the type of the life span of educational facility.

<Table *)-1> Type of the life span of educational facility

Type	Definition
Financial life span	Depends on finance rather than functional aspect
Functional life span	Time interval determined to be appropriate for facility to perform the purpose intended at the beginning
Social life span	Predicting the pattern of social change or environmental change and coping with society appropriately
Structural life span	The total available time for building. Life span of material such as concrete, reinforced steel, wood and the life span of system that integrates these.
Mechanical • facility life span	The end of life because facility is old or wasted (replacement, installment of mechanical facility)

2.4 Examination of related law and regulations

Definition on educational facility in the law that is defined in Korea is as below

.Lecture hall established in the educational land or gymnasium of school

. Educational facility established to improve culture of student and job training in the educational land or gymnasium of school

. Storage room, guard office and official residence established in training area of technical school or educational land of school

.Parking facility established under ground of student educational facility

.Facility that inspection organization (national school: Ministry of Education and Human Resources Development, public.private school: educational superintendent) operates directly for experience study and body & mind training of student

Law related to educational facility can be divided into law, presidential decree, departmental ordinance, and other order. Educational facility has function of education and life of students as well as public facility of the region and society. So the establishment is supported and regulated by lots of laws such as construction law, the act, city design law, school sanitation law, fire services act, land plan, and regional planning etc.⁵ These

⁵ Ministry of Education & Human Resources Development, Study on educational facility standard revision, 2003

related act and regulations are arranged systematically as <Fig. 2-3>.



Fig. 2-3 Law and regulations system related to educational facility

3. STATUS OF EDUCATIONAL FACILITY MAINTENANCE

Local office of education performs maintenance work by classifying organization for efficient maintenance of facility into school, educational affairs office and administration office and by systemizing those as affiliated organizations.

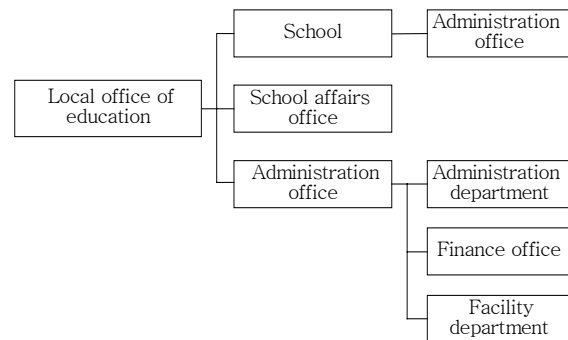


Fig. 3-1 Organization chart of educational facility maintenance

3.1 Maintenance system

Current maintenance work is controlled by administration office of education office in each region, and by administration office under the control of school head in the school. Educational facility maintenance manager can be divided into facility maintenance

Lacking special knowledge of school head who determines maintenance work, lacking technical labor of local education office, and lacking budget can be the cause of disutility of maintenance. So, reeducation about new technology, new method or facility management should be done for managers related to facility maintenance.

5. CONCLUSION

In this research, we executed interview with maintenance managers of schools in Daejeon to suggest improvement plan by analyzing maintenance work status and problem, and the result is as below.

- 1) Work execution through systematic and established process
- 2) Execution of special education for managers and sufficient succession
- 3) Distribution of basic manual and certain type of form on maintenance
- 4) Utilization of final result report on work execution
- 5) Efficient distribution of budget

As above, efficient and objective maintenance of educational facility should be performed and operated by using the improvement plan elicited from the results above.

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