Master's Science in Engineering

A Study on the Development of Contract System for the Large-scale Maintenance in Military Facilities through Multiple Award Schedule

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Abstract

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Since 2003, the Ministry of National Defense has selected the modernization of military facilities as a government project to modernize military facilities. Modernization of barracks facilities has increased the size and complexity of military facilities. Accordingly, there is a need for continuous maintenance and various complex management techniques to extend the life of facilities.

The purpose of this paper is to introduce overseas systems such as the Multiple Award Scheme in the United States and the Framework Agreement in the United Kingdom as an appropriate remedy for the planning and execution of military facility maintenance and management tasks that require sustainability. Through this, this paper suggests a more effective way of carrying out the task improvement in the military facility maintenance service which is expected to increase the demand for efficient and timely maintenance in the future.

In order to apply the multi-supplier contract to the maintenance of military facilities, it was confirmed that the legal basis should be prepared by revising the "Law on Contracts with the State Parties" and its enforcement ordinances. In order to minimize the change of the design between the works, it is necessary to make design-build contracts. In order to improve the satisfaction of the used unit and the construction quality, the used unit selects the contractor and reflects the result of the evaluation on the contract Appropriate contractors may be allowed to participate in maintenance work.

In this paper, we propose a method to apply the multi - supplier contract to the maintenance of the military facilities considering the specificity of the military facilities work, and furthermore. In the future, it will be a more effective system if additional studies are carried out on the appropriate scale of repair work to be carried out by multiple supplier contracts, appropriateness review by construction type, selection of qualified companies, and evaluation criteria.

Key terms: military facility, Multiple award schedule, design-build contracts

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Chapter 1. Introduction

1.1. Background and Objective of Research

The Korean army continued to make investments in the construction of military facilities since its establishment but the national people have negative perspectives on military facilities exposed to the media in case of accidents and incidents. It is because the military facilities have not reached the average consciousness level of the people compared to the improvement of the people's standard of living made by the high growth of the Korean economy. Therefore, the Ministry of National Defense upgraded the military room from the platoon unit bed type to the squad unit bed type considering the growth environment of the new generation soldiers. In order to improve the army base where the soldiers are living together, it is developed at national average (80~126㎡) and the modernization project for the military facilities is ongoing since 2003. And the part that is difficult to help with the defense financing business was supported by the BTL (Build-Transfer-Lease) method which invests in private capital. And it is carried out in parallel with the financial business.

The budget allocated to the construction of the military facilities as a defense financing business increased by 4.9 times in 2012 compared to 2002,

as shown in <Table 1-1>[1]. And while defense expenditure per GDP continues to increase, the military facilities expenditure was increased about 2.4 times in 2012 compared to 2002. This shows the significance of the modernization project for military facilities in defense policy. Currently, the modernization project for the military facilities is entering the final stage after 2014 as shown in <Table 1-2>[2]. As a result of this project, the housing and welfare conditions of the soldiers are improved.

The military facilities are getting large-scale and more complicated and the need for maintenance is increasing since after the modernization project for the military facilities. The defense budget for the maintenance of military facilities is increasing every year as shown in <Table 1-3>[3]. In 2014, the budget is increased about 2.6 times compared to 2005.

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[1] Department of Defense. (2014). 2014 Defense white paper, p270
[2] Department of Defense. (2015). Annual Report of National Defense Statistics 2015, p125
[3] Department of Defense. (2015). Annual Report of National Defense Statistics 2015, p126

<Table 1-1> Defense Facilities Construction Cost Trend

Division	Defense Expenditure (Hundred Million won)	Ratio of defense expenditure to GDP (%)	Facility construction cost(Hundred Million won)	Ratio of Construction Expenditure compared to Defense Expenditure (%)
2002	16 trillion 3,640	2.15	3,942	2.40
2003	17 trillion 5,148	2.16	5,275	3.01
2004	18 trillion 9,412	2.16	8,178	4.31
2005	21 trillion 1,026	2.29	9,868	4.67
2006	22 trillion 5,129	2.33	1trillion 1488	5.10
2007	24 trillion 4,972	2.35	1trillion 93	4.12
2008	26 trillion 6,490	2.41	9,933	3.72
2009	28 trillion 9,803	2.52	1trillion 6,595	5.72
2010	29 trillion 5,627	2.34	1trillion 4,088	4.76
2011	31 trillion 4,031	2.36	1trillion 7,458	5.55
2012	32 trillion 9,576	2.39	1trillion 9,281	5.85

<Table 1-2> Status of Improvement of Military Housing Facilities

Division	Army Military dormitory (battalion)	GOP / Coastal troops dormitory	Navy, Air Force dormitory	Military official residence	Executive accommodations
Up to2004	51	336	52	36,894	5,647
2005	60	100	75	3,991	3,000
2006	131	81	159	5,611	3,593
2007	41	75	82	3,111	6,054
2008	50	90	82	2,980	7,219
2009	111	275	122	5,440	11,357
2010	118	0	70	7,649	21,769
2011	61	0	159	748	5,182
2012	43	0	85	367	8,568
2013	12	13	12	598	2,024
2014	0	64	6	1,282	2,942
Total	678	1,034	904	68,671	77,355

<Table 1-3> Defense Facilities Maintenance Cost Trend

Division	Facility maintenance cost (Ten thousand won)	Increase / decrease compared to last year (Ten thousand won)	increase rate compared to last year(%)
2005	1,338	328	32.47
2006	1,543	205	15.32
2007	1,946	403	26.11
2008	2,224	278	14.28
2009	3,119	895	40.24
2010	3,145	26	0.83
2011	3,067	-78	-2.48
2012	3,331	264	8.60
2013	3,594	263	7.89
2014	3,580	-14	-0.38

In order to prolong the life span of new buildings that have invested a huge amount of defense expenditure, more specialized skills are needed for maintenance. In 2011, the Ministry of National Defense integrated the staff of facility operations into the headquarters of the National Defense Facility in order to improve the expertise and efficiency of facilities. In addition, six regional facility units were organized at each base to provide support to each unit. However, supporting a large number of units with a limited number of people showed the limitations on proper timing which is crucial to facility maintenance. As a result, large-scale repair work was returned to the field force during the facility maintenance work in 2016. Elementary officers must carry out large-scale repair work in the field force at the end of the term five years. However, due to lack of experience, they are causing problems in repair

and maintenance.

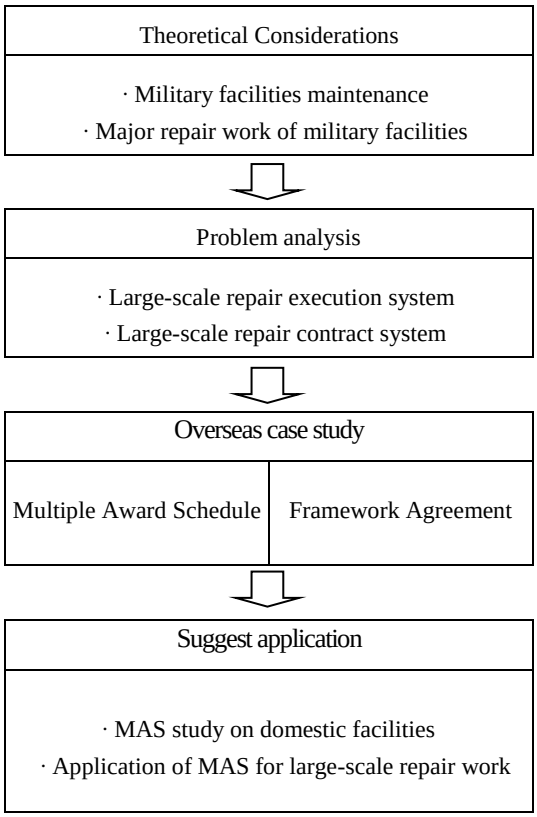
Therefore, this study is planned for large-scale repair work of facility projects necessary for specialized military facility maintenance. The purpose of this study is to introduce an advanced multiple award contract system suitable for the actual situation of the Korean military and improve the system in order to efficiently and timely carry out large-scale repair work which is expected to increase in the future.

1.2. Scope and Procedure of Research

This study selected the large scale repair work of the army which is in the transition period according to recent military policy changes among the maintenance work of military facilities. We originally planned to secure statistical value by conducting surveys to analyze large-scale repair work problems. However, since the questionnaire can be conducted after the army headquarters deliberation and approval according to the "Army Regulations", we received some of opinions through telephone calls. And we analyzed the results of various studies on the improvement measures related to the maintenance of military facilities. For multiple award contract system, we reviewed on various research reports analyzed in Korea.

The flow chart of this study is shown in <Figure 1-1>. In Chapter 1, we described the background and purpose of the study, the content and scope of the study. In addition, we reviewed recent research trends on military facilities maintenance. In Chapter 2, we described the theoretical considerations for military facilities maintenance and large-scale repair work for military facilities projects. In Chapter 3, we analyzed the problems of large scale repair work. In Chapter 4, we analyzed the Multiple Award Scheme of the US General Services Administration and the Framework Agreement of the Crown Commercial Service of the United Kingdom among the multiple award contracts that are being implemented foreign countries. In Chapter 5, we

suggested a method to apply the MAS which researchers are studying in Korea for large-scale repair work. Finally, we summarized the results of this study and concluded them in Chapter 6.



< Figure 1-1> Research Flow Chart

Chapter 2. Preliminary Study

2.1. Literature Review

Recently, a study to analyze and improve maintenance problems related to military facility repair work has been actively carried out as follows.

In the study on ‘Improvement Plan of the Military Facilities Maintenance Contract System’, Lim Jung Soo (2004) suggested that the military facilities maintenance contract method is not uniformly applied to domestic construction contract method, the specialized departments and personnel for contracting the maintenance of the military facilities is lacking and management of the maintenance is insufficient due to military organization security. In order to solve this problem, we suggested the introduction of US JOC[4] contract, establishment of facilities maintenance information of the Ministry of Defense organization, professional contract work, simplification of contract documents and use of electronic documents. It is required to prepare appropriate improvement plan to introduce the military construction contract.

In the study on ‘Improvement of Small-scale Maintenance Management System of Army Dormitory Facilities’, Lee Tae Hoon (2009) found that lack

[4] Job Order Contracting, Lim, J. S., (2004). Improved maintenance contract system for military facilities

of dedicated organization of the Army, insufficient management of maintenance data in document form, lack of specialist workforce and poor budget for maintenance are problems. As an alternative to solve this problem, he proposed the construction of computerized military facilities information system, establishment of maintenance and inspection system, establishment of maintenance and operation policy, independent management of facilities management and maintenance management, and service management system. The study has limitations in establishing basic concepts for maintenance of military facilities.

In a study on "Outsourcing Improvement of Military Facilities Maintenance", Yoon Hyun Ho (2010) focused on the lack of military engineering and military service, insufficient expertise of military engineers and combat work according to Defense Reform 2020 and the slimming of defense personnel and organization and analyzed the outsourcing cases of non-combat area maintenance and management and suggested ways to expand to military service management organization through civil consignment process. This study is based on the premise that the maintenance activities of military facilities may be obstacles to the execution of military operations. However, facilities maintenance is military service. In order for military service maintenance officers and civil servants (facilities) soldiers to perform their duties in case of Korean war in the worst situation, their skills on the military facilities management should be mastered. Therefore, it is difficult to

completely separate the maintenance and management work from the military work.

2.2. Military Facilities Maintenance

2.2.1. Military Facilities Maintenance Concept

The concept of military facilities maintenance is not defined internally but "it is the same as maintenance of civilian facilities and there is a difference in that military facilities are managed by a special organization called the military."[5]. According to the ‘Guidelines for the Implementation of the Military Facilities Project’ by the Ministry of National Defense, the maintenance of the facilities shall be carried out through continuous inspection of the facilities to prevent the maintenance of the facilities and the safety and convenience of the users. In addition, in order to carry out the repair of the facilities efficiently, the feasibility of the repair should be checked beforehand and carried out in due time. And maintenance of facilities shall be carried out with minimum discomfort due to user's limitations and safety first should be a priority[6]. In other words, precautionary inspection should be carried out for the safety and convenience of soldiers using military facilities. In addition, defects and damage must be timely and minimized to the discomfort of soldiers.

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[5] Son, C. S., (2004). Maintenance manpower estimating model for military installation, p6

[6] Department of Defense. (2013). Guidelines for the execution of military facilities project, p29-30

2.2.2. Military Facilities Maintenance Classification

Detailed classification of military facilities maintenance is classified by the Army, Navy, and Air Force according to their characteristics. The purpose of this study is to investigate the classification of the army because it is targeting the army. According to the Army "Facilities Operation Regulations," facilities maintenance operations are classified as shown in <Table 2-1>[7]. Facilities operations and utility charges are areas of daily maintenance. Small-scale repair and large-scale repair are classified as maintenance areas that are performed as follow-up measures through facilities safety inspections.

<Table 2-1> Army Facilities Management Classification

Division	Field	Remarks
Facility Operation	· Facilities safety inspection and facilities management service · Maintenance of environmental facilities	Facility Management Safety management
Utility charge	· Electricity and water supply · Waste water	Saving energy
Small-scale repair work	· Special (preventive) maintenance · Delegated maintenance	Facility repair work
Large-scale repair work	· Improvement of energy conservation facilities · Repair of environmental pollution prevention facilities · Improvement of working environment for soldiers · Maintenance of operations and boundary facilities · Maintenance of old buildings, leaking buildings and other administrative facilities	

[7] ROK Army. (2015). Facilities Operation Regulations, p42

2.2.3. Military Facilities Maintenance System

According to the ‘Guidelines for the Implementation of the Military Facilities Project’ by the Ministry of National Defense, ‘the responsibility for the maintenance of the facilities lies with the Chiefs of Staff and the Chief Engineer (Facilities Use Commander) who are using the facilities of the year. The military that do not have facility management capabilities should be supported and managed by superior or supportive militaries.’[8]. In other words, the basic responsibility for the maintenance of the facilities lies with the commanding officer who are using the facilities. And the facility use military should take the responsibility on the facility management and superior military should take the second responsibility on the fields where capacity is exceeded.

In addition, the guideline states that, "each army chief and chief engineer shall secure the budget, organization, personnel and equipment to manage the facilities they have and maintain the functions of the facilities efficiently." Therefore, the Chief of Staff, Air Force, and Chief Engineer are obliged to establish a system for facilities maintenance. And the Army should maintain facilities management system as shown in <Figure 2-1>[9].

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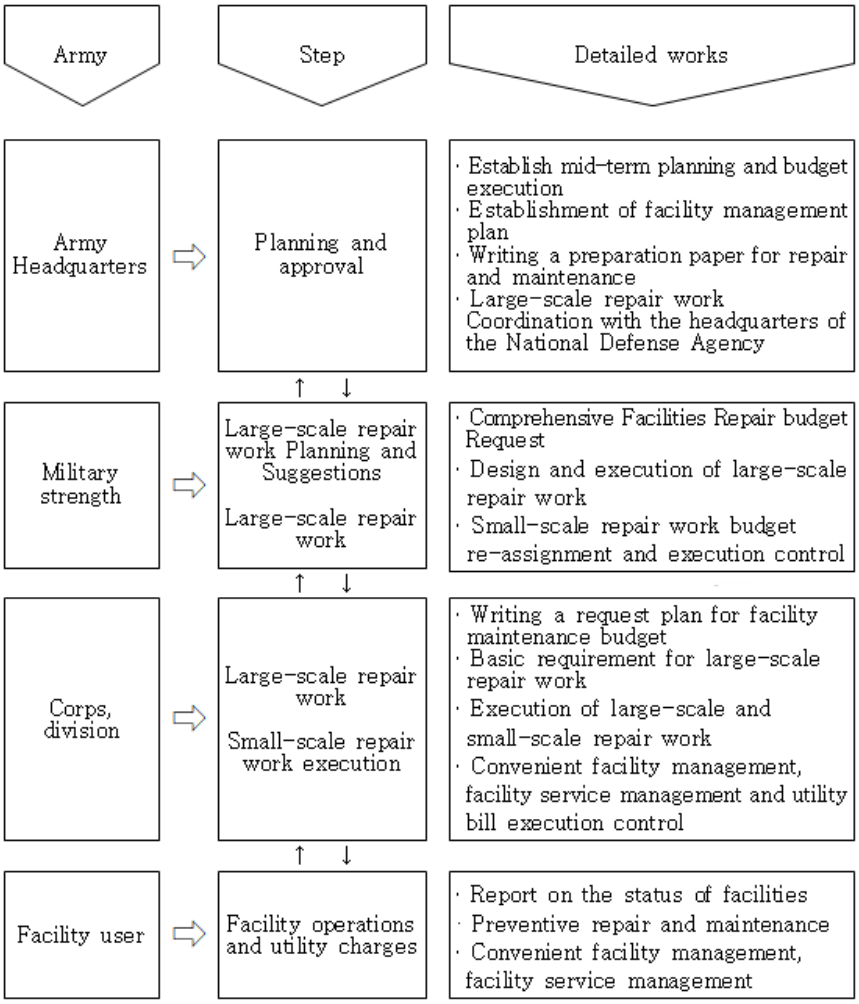
[8] Department of Defense. (2013). Guidelines for the execution of military facilities project, p29

[9] ROK Army. (2015). Facilities Operation Regulations, p41



<Figure 2-1> Army facilities management system

According to the Ministry of National Defense's "Guidelines for Executing Military Facilities Projects," facility repair work is divided into large-scale repair and small-scale repair. It is defined as "Large-scale repair work refers to the repairing or replacing of old facilities which have to be restored or

improved for the original function of the old or damaged facilities, thereby significantly increasing the useful life of the facilities. On the other hand, Small-scale maintenance is a partial repair or substitution to prevent large-scale repair work."[10]

<Table 2-2> Army Repair Work Division

Division	Repair range	Confirmed	Design	Permission/Completion
Small-scale repair work	· Preventive repair - Occasional use of facility users or periodic maintenance - Within 3% of facility price	Facility military Logistics office	-	Above company level
	· Delegated repair - Prevention of large-scale repair work - Within 4~20% of facility Price	Corps, Division	General command troops	General command troops
Large-scale repair work	· Large-scale maintenance that can significantly increase the service life economically · Within 21~50% of facility price	Army Headquarter	Field army & 2nd operation command headquarter	Field army & 2nd operation command headquarter

The Army checks the facility from time to time as shown in <Table 2-2>[11] (12), and purchases the repair material by itself and measures it with its own technical manpower. They conduct preventive maintenance and receive maintenance materials from general command units and technical personnel from engineering units.

[10] Department of Defense. (2013). Guidelines for the execution of military facilities, p7
[11] ROK Army. (2015). Facilities Operation Regulations, p42

Accordingly, it is subdivided into large-scale repair work (large-scale repair work) by the delegated repair and facility business. The subject of this study is a large-scale repair work, which is the same concept as the general repair work of the private sector.

2.3. Large scale repair work of military facility business

2.3.1. Large-scale repair work plan

According to the "Guidelines for the Implementation of the Military Facilities Project" by the Ministry of National Defense, "Large-scale repair work shall be implemented in a phased manner by establishing an annual maintenance plan based on the facility life cycle and incorporating it into the mid-plan. This means that it is necessary to refrain from partial remuneration and to improve the total budget by investing the available budget in full. "[12] The process in which budgets are incorporated into the mid-term plan is shown in <Figure 2-2> [13].

According to these guidelines, the repair maintenance of the army, navy, air force, and other organizations shall make plan in accordance with the Mid-Term Defense Plan. It is necessary to organize the budget and plan the repair plan using the facility status management menu of the Defense Facilities Integrated Information System. Investments in facilities that are not included in the maintenance plan are minimized. However, unexpected urgent large-scale repair work such as natural disaster recovery, improper water supply improvement, etc. will be executed with approval of business plan change.

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[12] Department of Defense. (2013). Guidelines for the execution of military facilities project, p43

[13] Choi, Y. H., (2008). Evaluation and Improvement of Maintenance Characteristics of Barracks Facilities, p19

The same structure and single repair of the same kind should not be planned for the private contract purpose by dividing the maintenance period and the construction amount. Before the repair work plan is established, it is necessary to check the site of the repair target facility and reflect proper contents such as repair material and repair method[14]. The priority of facility maintenance is as follows[15].

① Facilities with safety risks (safety of buildings and structures, fire prevention facilities, etc.)

② Facilities connected directly with function (electricity, water supply, heating, sanitation, firefighting facilities, etc.)

③ Facilities that impede the execution of operational missions (building, airfield, harbor, etc.)

④ Facilities that are defective in maintaining facilities (waterproof, condensation, etc.)

⑤ Energy conservation facilities (insulation, power saving, water saving facilities, etc.)

⑥ Environmental pollution prevention facilities (Wastewater treatment facilities, pollution prevention facilities, incinerator, etc.)

⑦ Improvement of other old facilities

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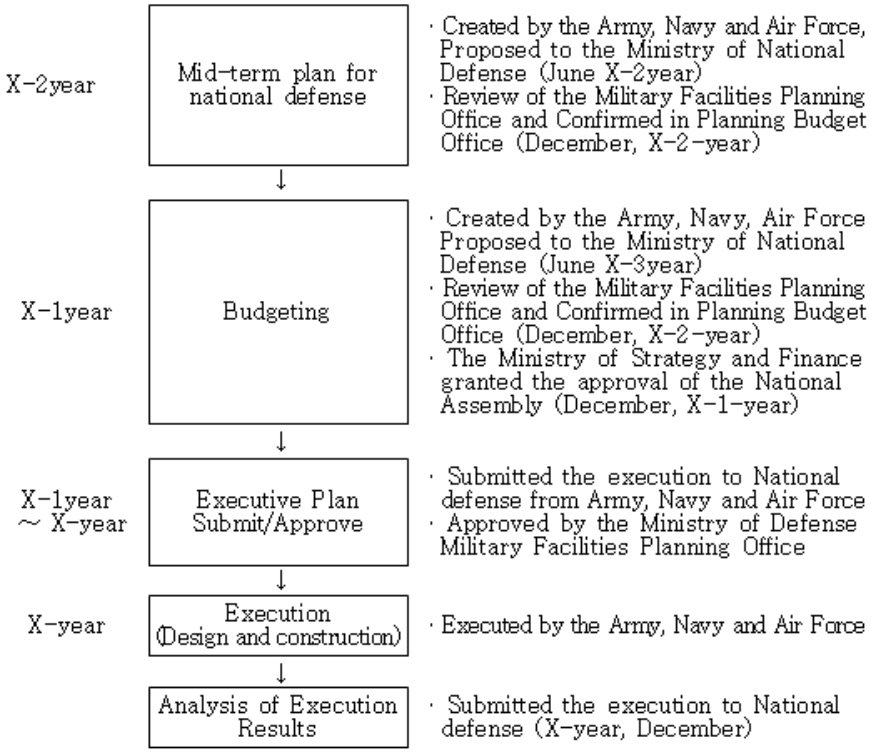
[14] Department of Defense. (2013). Guidelines for the execution of military facilities, p45-46

[15] Department of Defense. (2013). Guidelines for the execution of military facilities, p46



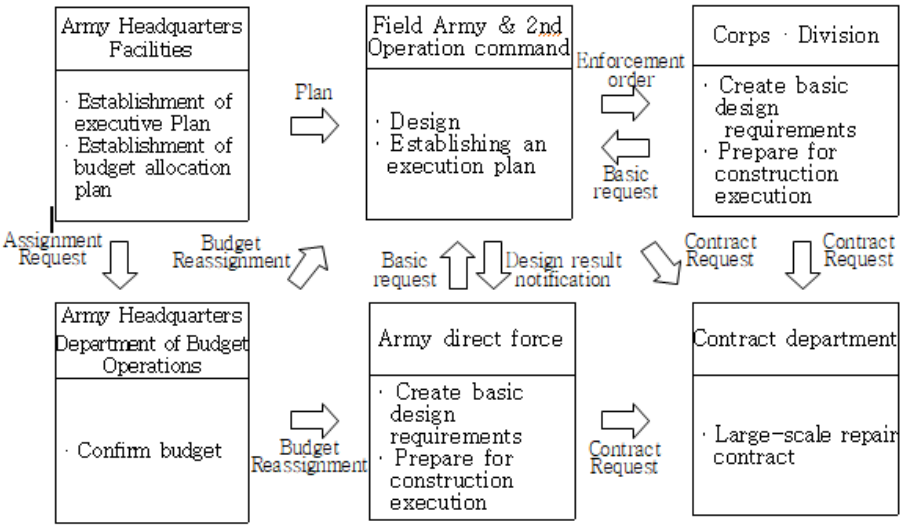
<Figure 2-2> Procedures for Repair Work

2.3.2. Large-scale repair work execution

According to the Army's "Facilities Operation Regulations," the large-scale repair work execution system is conducted in the same manner as <Figure 2-3>[16]. The large-scale repair work is carried out by the facility business (construction) through a contract. The construction department leader, who is instructed to execute the facility construction designates a construction

[16] ROK Army. (2015). Facilities Operation Regulations, p55

supervisor and hands over the facility construction management until when the facility construction supplier (construction company) complete the construction inspection and maintenance work from the contract date.



<Figure 2-3> Army Large-scale Repair Execution System

2.3.3. Large-scale repair contract

The contract for the large-scale repair work, according to "Article 7, Clause1 of the Act on Contracts for the nations", the head of each central office or the contracting officer must have a general competition to conclude a contract. However, if it is deemed necessary in consideration of the purpose, nature and scale of the contract, competition or contract may be made by restricting the qualification of the participant or designating the participant as

prescribed by Presidential Decree. The design, construction and separation ordering method and the bidding method by the general competition are applied. And when the reason is reasonable, the contract may be made in special cases.

Chapter 3. Problem Analysis of Large-scale Repair Work

3.1. Problems of Execution Systems

3.1.1. Periodic Problems

The large-scale repair is planned to be implemented in the mid-term plan of the defense in consideration of the life cycle of the facility and planned to be constructed at least X-2 years. According to Lee Tae-hoon (2009), "every year, the freeze or small increase in the maintenance budget of the facility shortens the life span of the facility and increases the demand for large-scale repair work. The budget required by the entire army is 121.7 billion won but the authorized amount is 3.32 billion won. Only about 27% of the required amount has been paid[17]. Therefore, he pointed that they are having difficulty in maintaining the appropriate level of facilities. In other words, due to the lack of budget, it is undergoing large-scale repair work. Therefore, aging is serious rather than large-scale repair work. The large-scale repair work that requires measures to repair defects is a priority. The facility user hopes that the defects of facilities can be promptly resolved by large-scale repair work.

[17] Lee, T. H., (2009). Improvement of small-scale maintenance management system of army barracks, p29

However, they feel it is unnecessary because it cannot systematically infringe.

3.1.2. Cost Problems

Large-scale repair work is carried out through contracts by separating design and construction. There is a possibility that the construction company changes the design due to the time and space design and the inconsistency of the site. In the case of the military, however, there is a problem that additional budget should be secured in case the design change exceeds the contract amount. It is difficult to get approval of large-scale repair work and secure additional budget. In addition, facility user has the perception that it is not possible to understand that the amount of the award allocated through the subcontracting contract, which is allocated to repair the facility is used for large-scale maintenance of other units in accordance with the reuse plan. And, if the budget necessary for the design change is not taken care of, the large-scale repair work does not pay for the partial repair. In addition, it cannot improve by intensive investment of available budget for the total repair expenses of each site.

3.2. Problems of Contract System

3.2.1. Problems with Bidding Method

According to Lim Jung Soo (2004), "In the case of a competition contract, the bidder with the lowest price is determined to be the winner. In this process, companies that are not suitable for construction may participate in the bidding. In some cases, they can be selected as winners and the quality of the construction may be lowered." In terms of transparency of the contracted companies in the contract, the negative (85%) and the positive (9%) position of the contractor showed a big difference of 10 times. And the number of contracts to be concluded on the basis of the trust was not made."[18] In other words, a large-scale repair work can be concluded with a contractor whose construction capacity is not verified as the majority of the works with less than 50 million won. As a result, in the case of general competition, an unqualified company contracts and the construction quality cannot be guaranteed due to illegal collective subcontracting. In the worst case, it is also possible that the contract may be canceled.

[18] Lim, J. S., (2004). Improved maintenance contract system for military facilities, p17, p26

3.2.2. Problems of contract system

As discussed in the large-scale repair plan of the study 2.2.1, the Ministry of National Defense's "Guidelines for Execution of Military Facilities Project" concludes contracts through general competition as one business by bundling several sites in the same type to prevent contracts. Usually two to three sites are located geographically elsewhere. Since the field explanation process is omitted in most of the bidding process, the construction company confirms all the sites and proceeds on a project-by-site basis. Therefore, it takes time to prepare for the construction after contract and to prepare for more than one site. As construction progresses sequentially in each site, the facility-user makes the final construction complains that the construction work is delayed after the contract is concluded. Construction companies tend to reduce the number of construction days because of the time required for visiting time and the security and training. If the period becomes short, the construction company rushes to meet the period and causes quality deterioration.

3.3. Comprehensive Analysis

Currently, large-scale repair work is generally applied to design, construction and separation ordering methods, bidding methods based on general competition, and the lowest price bidding method. However, it is difficult to meet the desired timing of the facility use unit due to the large amount of time required for the allocation and execution of the large-scale repair work budget and the time required for the series of the procedure for the design, construction order and contract. The large amount of repair work with the construction amount of less than 50 million won is the majority and the quality of the construction depends on the construction ability of the construction company. However, it is worried that the quality of construction will deteriorate due to the possibility when nonconforming companies may be selected. The construction company needs to make a lot of effort in order to meet the due date by proceeding 2~3 small sites sequentially. The difference between the winning bid in the bidding process will be reinvested in other projects, which does not meet the principle of large-scale conservative investment.

Chapter 4. Case Study of Overseas Multiple Award Schedule Contract System

4.1. Multiple Award Schedule in the United States (MAS)

4.1.1. Concept of MAS

Multiple Award Schedule (MAS) is an agreement in the United States to "contract multiple award of goods and services that are equal in quality, performance or utility to the goods and services required by each administrative department of the federal government. And to make it available to customers."[19] This is the most recommended contracting system in the US General Services Administration (GSA) to simplify the purchasing process and drive competition among companies.

When a contractor makes MAS contract with GSA, the contractor obtains “Contract Vehicle”[20] which can deliver goods and services to a demanding organization (each administrative department of the federal government) that receives goods and services from the GSA.

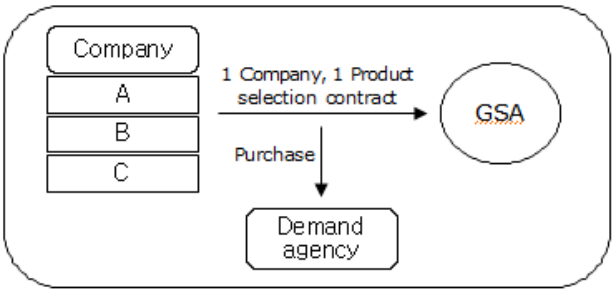
4.1.2. Characteristics of MAS

The main difference between MAS and competitive bidding is to receive

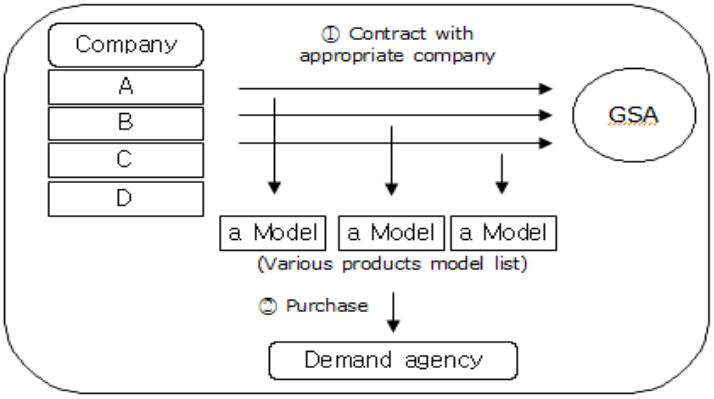
[19] Korea Procurement Research Institute. (2007). A Study on the U.S. Multiple Award Schedule for the Expansion of Korean Firms in the U.S. Government Development Market, p13

[20] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, p7-8

one item (or service) from one of several bidders, as shown in <Figure 4-1>[21] . However, the MAS selects a number of qualified suppliers as shown in <Figure 4-2>[22]. And the suppliers choose to purchase goods from the available supply.



<Figure 4-1> Concept of Competitive Bidding



<Figure 4-2> Concept of Multiple Award Contract

Suppliers with MAS have the opportunity to supply the goods to contractor at the contracted price. The general contractor is not guaranteed the

[21] Korea Procurement Research Institute. (2007). A Study on the U.S. Multiple Award Schedule for the Expansion of Korean Firms in the U.S. Government Development Market, p16

[22] Korea Procurement Research Institute. (2007). A Study on the U.S. Multiple Award Schedule for the Expansion of Korean Firms in the U.S. Government Development Market, p16

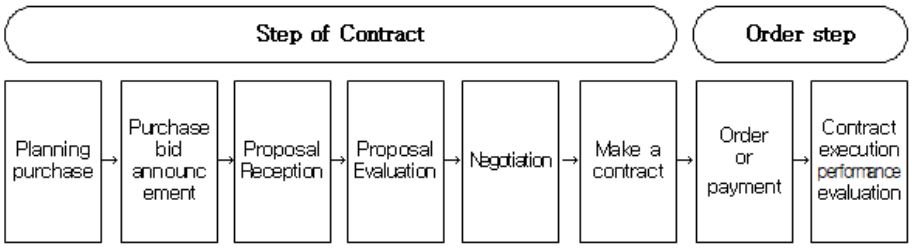
opportunity to sell a certain quantity of goods but fishing license, and hunting license are given. The GSA and MAS have concluded contracts under condition that the order of delivery of goods is not presumed. In the future, the actual ordering activity, which requires delivering the goods will be skipped and the delivery of the goods will be made. (Meaning that it is under the contract)

In the existing procurement method, a certain supplier was consistently supplied with certain goods by the demanding organizations for a certain period. As MAS does not specify the supply of certain goods, the supply time is not fixed. It is an Indefinite Delivery and Indefinite Quantity (IDIQ) system that allows the demanding organization to supply the necessary quantity of goods at the required time.

MAS has the same opportunity as an extended contract called Evergreen Contracts. Five years are guaranteed for the first MAS and if you keep a certain profit according to the supply performance, you will receive a total of 15 years for up to three times every 5 years. Thus, long-term contracts are possible up to 20 years.

4.1.3. Procedure for MAS

The procedure for MAS is divided into the contract phase and the order phase as shown in <Figure 4-3>. The contracting phase consists of 1) purchase planning, 2) purchase bidding notice, 3) proposal submission, 4) proposal evaluation, 5) negotiation, and 6) contract concluding procedure. The order step consists of 7) ordering and payment, and 8) evaluation of contract performance.



<Figure 4-3> Process of MAS

1) Establish a purchase plan

The purchase planning consists of purchasing plan and market research. It is a step to determine necessary quantity for several years considering demand and budget with reference to previously planned quantity. The procurement plan is to establish a comprehensive plan that enables the demanding organization to supply the necessary supplies at reasonable cost. As it is shown in <Table 4-1>[23], it considers the background and purpose of the

[23] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, 15

purchase and the action plan. Market surveys are conducted in the same manner as in <Table 4-2>[24] to increase the efficiency of government expenditures.

<Table 4-1> Purchase Planning Considerations

Background and Purpose of Purchasing	Action Plan
· Evaluation procedure · Cost delivery or performance time · Risk factors · Items required for purchase · Applicable conditions · Performance and characteristics of purchased product · Offsetting (cost, schedule, etc.) · Ability to purchase, etc.	· Supply (demand agencies) · Procedure for selecting supplier (contractor) · Budgeting and financing · Priority and allocation · Management information requirements · Considerations when concluding a contract · Performance of contract-related government · Safety considerations

[24] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, p16

<Table 4-2> Market Research Method

· Government or industry contacts with knowledge of market capabilities to meet the conditions
· Review of recent market research findings made to meet similar or identical conditions
· Announce official information to appropriate technology or scientific magazines or industry publications
· A database of available contracts and other means of procurement, as well as government and commercial databases that provide information on government procurement
· Interactive exchange between industry and procurement officers and government agencies (demand agencies)
· Obtain a list of suppliers of similar items from other contracting government departments or agencies, industry associations, or other suppliers.
· Catalogs and other product literature published by producers, suppliers and sellers available off-line or on-line (brochure, commercial price list)
· Hold a public hearing to invite potential proposals early in the procurement process

2) Purchase bid announcement

The announcement consists of the Pre-solicitation announcement and the Bid Solicitation announcement. After the announcement of the first order schedule, the second bidding recommendation announcement will be announced by collecting opinions from other relevant agencies and companies.

Examples of announcement documents are shown in <Table 4-3>[25] and consist of descriptive documents containing general information on the announcement, necessary document and optional documents required for the proposal.

[25] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, p18

<Table 4-3> Schedule 70 (IT service announcement documents)

No.	Announcement documents	Document classification (Description / required / optional)
1	Read Me First	Description
2	Solicitation	Description
3	SF1449	Required
4	Regulations Incorporated by Reference	Description
5	Past Performance Evaluation	Required
6	Small Business Sub Contracting Plan	Optional
7	Proposal Price List Preparation	Required
8	Commercial Sales Practice Format (CSP-1)	Required
9	Agent Authorization Letter	Optional
10	Letter of Supply Template	Optional
11	SCA Wage of Determinations Index	Description
12	Sample Labor Category Matrix	Service required
13	Critical Information Specific to Schedule 70	Description

3) Proposal acceptance

In the proposal submission process, the proposer (preliminary supplier) selects the item (or service) of the bid proposal and selects appropriate proposal document according to technology, price and service. The proposals are possible for more than two items. If MAS is concluded in the future, it will be qualified to be able to supply multiple products. Proposers must register with the US System for Award Management (SAM) to participate in the proposal. They must complete the course through the GSA website and be

able to participate in the proposal by checking for restrictions such as national default, state tax liability, and other criminal activity, as well as all applicable requirements.

4) Evaluation of proposal

The GSA will evaluate the proposal received in accordance with the evaluation methods and criteria set forth in the notice of tender prior to notice. It evaluates eligibility and price. The eligibility evaluation examines items such as <Table 4-4>[26].

At the time of price evaluation, the GSA terms and conditions only compare the price without considering the costs and benefits of the proposer. Therefore, the they can ask for the proposer to provide detailed information on costs and benefits. The duration and analytical quality of the price analysis will vary depending on the characteristics of the goods to be procured, currently made cost, the budget price of the government, and information obtained from similar contracts recently concluded. It uses the same price analysis technique as shown in <Table 4-5>[27].

[26] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, p29
[27] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, p29

<Table 4-4> Eligibility Evaluation Considerations

· Eligibility is a qualification that allows you to legally contract with the government. (Judicial qualifications such as crime, tax delinquency and other criminal acts)
· Ability to obtain sufficient financial capacity for the implementation of the contract or funds necessary to carry out the task
· Satisfactory record in terms of integrity and business ethics · Competence to meet special criteria other than those specified in the bidding certificate · Interactive exchange between industry and procurement officers and government agencies (demand agencies)
· Technical proposal evaluation – Adequate past performance – Ability to complete the tasks specified in the contract within the term of the contract. – The organization required to implement the contract and the corresponding early operating capability – Possess production facilities necessary for contract implementation (architecture, facilities, facilities, technology, etc.)

<Table 4-5> Price analysis technique

· Comparing prices for bidding invitations
· Contract precedent price, government and private contract price comparison with present price
· Comparison between price tags, market published prices, similar indexes, and discount or refund arrangements reflecting market competition

5) Negotiation

Negotiations are made on price, quality assurance, revaluation[28] reviews, and so on. The main purpose of price negotiation is to determine the supply base price of the most important goods for the MAS conclusion. In order to achieve the Most Favored Customer (MFC), GSA sets the initial price proposed by the proposer's the negotiated price. The negotiation is a process

[28] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, p31

to narrow the gap between the proponent and the GSA supply price. The negotiation methods use bilateral or e-mail, correspondence method.

6) Signed contract

The GSA and the proposer conclude the MAS at the agreed delivery price and conditions through negotiation. Companies that meet all of the conditions set out in the Bidding Documents and those whose prices and other conditions meet the GSA requirements are selected as MAS suppliers. The contract type is the common form of the bilateral face just as the negotiation. If the GSA offers a satisfactory low price or a high discount rate, it should be replaced by e-mail, letter, etc.

7) Order and payment

Basically, orders are made with MAS concluded base amount. Demand agencies (order agencies) must clearly specify the goods or services they require and order them from suppliers. At the order stage, it includes Statement Of Work (SOW) and product that does not include SOW as shown in <Table 4-6>. The ordering method depends on Micro purchase threshold, Simplified Acquisition Threshold (SAT), exceeding amount SAT.

<Table 4-6> Order characteristics according to existence and nonexistence of work instruction by amount section

No	Amount	Items requiring work instructions	Items not requiring work instructions
Small amount purchase standard	Below $3,000	Demand agency can order directly	Demand agency can order directly
SAT	Above $3,000 and below $150,000	· Establishment of SOW and evaluation criteria (preparation) · Send RFQ to more than 3 companies (Including SOW) · Consider the highest value	· Price survey on more than 3 companies · Consider price discounts · Consider the highest value
Above SAT	Above $150,000	· Establishment of SOW and evaluation criteria (preparation) · Receive quotations from more than 3 companies · Consider price discounts · Consider the highest value · Considering price adequacy (input manpower and air power)	· Writing RFQ · Estimate more than 3 companies ·Receipt · Consider price discounts · Consider the highest value

Depending on the section, a two-step competition is applied through Request For Quotation (RFQ) and Request For Proposal (RFP). Payments are generally paid using government commercial purchase cards.

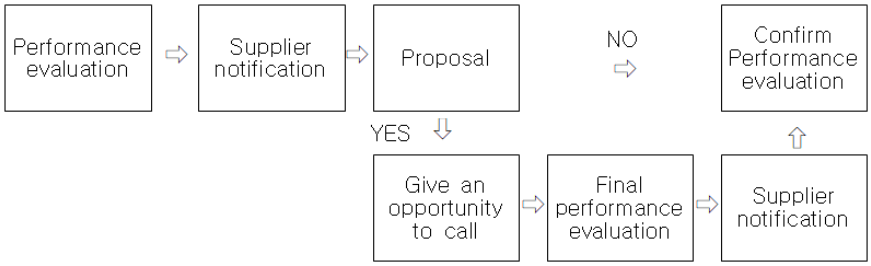
8) Evaluation of contract performance

After one year from the MAS, the requesting organization will proceed with the evaluation of the supplier's contract execution. The supplier's contract performance data is used as information for renewal or extension contract with the supplier in the future. The GSA contractors shall write evaluation of

the contract performance of the supplier whose MAS has expired and keep it. The evaluation of the performance of contract execution is carried out by the same process as shown in <Table 4-7>[29] and <Figure 4-4>[30].

<Table 4-7> Contract Performance Evaluation Considerations

· The supplier meets all conditions of contract and workmanship standards · Good Performance of supplier's forecasting and control of contract cost · Keeping delivery schedule of suppliers and execution of business affairs · Attitude toward supplier satisfaction (rational and cooperative attitude) · Company interest in the interests of demand organizations



<Figure 4-4> Procedures for Evaluating Contract Performance

[29] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, p43
[30] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, p42

4.1.4. Facilities MAS

Construction and construction related services can be concluded on GSA Schedule56 and Schedule871. However, due to the laws related to the construction of the US, it does not provide actual architectural design, construction service, architectural & engineering (A&E) service. It concludes MAS contracts for unit price contracts for construction related goods and material cost, labor cost, and equipment utilization fee of non-construction Engineering Service. The contract can be extended for two years, after the first five-year contract.

4.2. UK Framework Agreement

4.2.1. Framework Agreement Definition

The EU Public Procurement Directive stipulates that Framework Agreement (FA) is a convention in which one or more contracting authorities and one or more suppliers set the expected price and expected quantity to discipline contracts awarded for a specified period of time[31].

4.2.2. Framework Agreement Features

The Framework Agreement in the UK is to conclude a (basic) agreement on terms such as the price and expected quantity required for future contracts. The procurement agency does not generate the rights and obligations that must be purchased from the supplier. Therefore, it is distinguished from the general contract in which sales are generated. The subsequent contract procedure after the conclusion of the agreement is no different from the general contract.

The Framework Agreement is based on the "Most Economically Advantageous Tender (META)" or "The Lowest Price", which is the most economically advantageous bidding standard. The most appropriate bidders are selected considering the conditions, such as quality, price, function,

[31] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, p217

operation cost, cost effectiveness, post management, technical support delivery period and delivery period, necessary for concluding the agreement.

The basic agreement period cannot exceed 4 years, but in some cases, the contract period may exceed 4 years for effective competition between suppliers when the collection of some suppliers is insufficient compared to investment.

4.2.3. Framework Agreement Contract and Delivery Procedure

1) Contract procedure

The Framework Agreement type is divided into 4 categories according to the number of suppliers and whether contract conditions are established as shown in <Table 4-8>[32]. If multiple suppliers are involved and the terms of the contract are not decided, a second round of competition will be held in the "STEP 2" process.

<Table 4-8> Framework Agreement Contract Type

Division	Single supplier	Multiple supplier
Contract condition is confirmed	STEP 1	STEP 1
Contract condition is yet confirmed	STEP 1	STEP 2

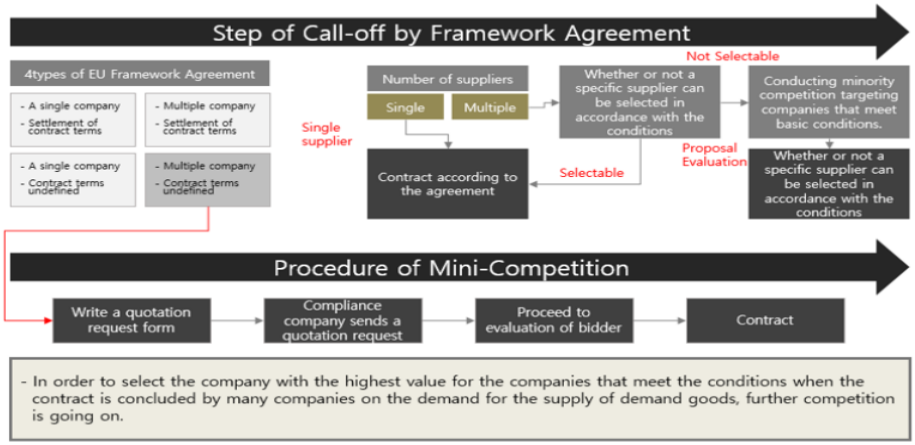
[32] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, p222

About the procedure of the Framework Agreement, generally, in case of "STEP 1", it selects suppliers by analyzing demand analysis and supply market, designing contract and bidding method, submitting bidding notice and bidding documents, and evaluating company (evaluation of bid). In case of "STEP 2", the final supplier is selected by performing second round of competition and company evaluation.

2) Delivery procedure

The framework agreement delivery procedure is shown in <Figure 4-6>[33] (36). In case a single supplier has the terms of the contract, a single supplier has not established the terms of the contract, and the terms of the contract are determined by multiple suppliers, the contracting and delivery procedures will proceed according to the Framework Agreement terms. If the contract conditions are not confirmed by multiple suppliers, it proceeds with the Mini-Competition and selects the supplier that provides the best value of the best value. The Mini-Competition is carried out by three or more suppliers by writing an Invitation To Quote (ITQ), sending ITQ to the compliant supplier and evaluating the bidder.

[33] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, p229



<Figure 4-5> Procedures for Framework Agreement Delivery

4.2.4. Facilities Framework Agreement

Facilities Construction & Architectural & Engineering (A&E) Service concludes a contract as a sole supply or competition contract. The term of the contract is usually for 4 years but it can be extended for 1 or 2 years by extension contract. The Crown Commercial Service (CCS) of the British Public Procurement Service (CCS) recommends a 2-year contract type in the first two years.

4.3. Comprehensive Analysis

The common point between the US MAS and the UK Framework Agreement is that the supplier pledges to complete (or supply) something with the contractor (the demanding organization). This is from a contractor (procurement agency, GSA or CCS) who is entitled to receive repair from the contractor. However, the suppliers (or agreement) does not make profits through the contract.

Government agencies, which consist of procurement agencies and demand agencies do not need to ensure the sales to the suppliers through multiple supplier contracts. Therefore, it is not necessary to prepare the budget. The procurement agency selects the supplier for the expected demand rather than the contract made by the demanding organization. Therefore, the supplier can be evaluated with sufficient time to select a good supplier.

Even if a contract is made, the supplier will not have revenue immediately, However, in the uncertain situation of annual sales through general competitive bidding, many supplier contracts will guarantee sales opportunities over many years.

Demand agencies will be able to select from a number of suppliers that have already been contracted and receive supply from the supplier at the desired time. Through a multi-year contract, they can continue to receive quality supplies from quality suppliers.

Procurement agencies may shorten a similar type of repetitive contract by one time. It saves the effort required for administrative processing by replacing repeated contract activities.

The UK Framework Agreement makes an agreement with a number of suppliers without specific contract terms being finalized. In addition, when demand is generated by a demand agency, through the Mini-Competition, it can select a specific supplier that meets the conditions. It is not like the procurement in Korea which is to prevent unfair trade but it has a form of contract to supply through two steps.

The US MAS has a post evaluation system. Therefore, it is possible to manage superior recipients by evaluating the results of the supplier's supply. It is necessary to use the system when introducing it in Korea.

There is a difference between the US MAS and the UK Framework Agreement facility sector. Framework Agreements are used throughout the construction industry, from facility construction to architectural & engineering. On the other hand, MAS has a system but limited to construction materials therefore it can only conduct delivery due to institutional obstacles such as US laws. Therefore, institutional regulations should be preceded when introducing the multiple supplier contract system in Korea.

Chapter 5. Application of Large-scale Repair Work MAS

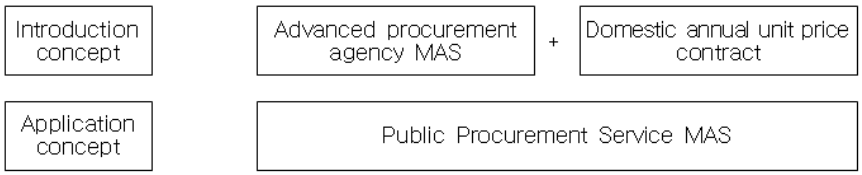
5.1. Domestic Facilities MAS Study

Many supplier contracts in the domestic procurement field have amended the Enforcement Decree of the Procurement Business Act (December 2007) Since December 2005. In the field of facilities, research on the operation of facility MAS is underway to reduce the period of procurement work for simple and repetitive construction to prevent the social cost due to the repeated administration of the public institution, and the time and material waste of the bidder.

5.1.1. Facility MAS Application

According to the "Proposal for the Advancement of Service Procurement System in Korea" by the Korea Procurement Research Institute, "Facility MAS selects and concludes a successful bidder among a large number of pre-contracted parties as shown in <Figure 5-1> for small-scale simple repetitive construction (repainting construction) and construction engineering services. It absorbs and integrates annual unit price contracts, which are being implemented in domestic MAS systems in advanced countries such as the US and UK[34].

[34] Korea Procurement Research Institute. (2014). A Study on the



<Figure 5-1> Concept of facility MAS

An annual unit price contract is a contract that frequently orders simple repetition work from the client. Facility MAS is a type of work that frequently orders simple repetition work from a large number of clients.

The contract procedure of the domestic supplier is divided into the preparation process of facility MAS as shown in <Figure 5-2>[35] and the execution process of facility MAS as shown in <Figure 5-3>[36].

Advancement of the Procurement System in the Service Sector, p252

[35] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, p253

[36] Korea Procurement Research Institute. (2014). A Study on the Advancement of the Procurement System in the Service Sector, p254

① **Identify demand and establish order plan**	Establishment of order planning through demand identification
⇩	
② **Order Details and Item Confirmation**	Public Procurement Service, professional organizations (related associations, etc.)
⇩	
③ **Preliminary announcement of orders to the country market**	Details of unit price and bid qualification and agreements
⇩	
④ **Feedback** (within 90 days)	Comments on the published content (related to the unit price and a qualified person for bidding and agreement)
⇩	
⑤ **Order Details Item name and confirm unit price**	Public Procurement Service, professional organizations (related associations, etc.)
⇩	
⑥ **Ordering and Announcement to Country Market**	Details of unit price and bid qualification and agreements
⇩	
⑦ **MAS Application** (Within 60 days)	MAS application delivery company is preliminary contractor
⇩	
⑧ **Eligibility assessment**	Public Procurement Service, professional organizations (related associations, etc.)
⇩	
⑨ **Electronic notice** (Results of evaluation and agreements)	The results of the qualification evaluation are approved by delivery contractor. (Notification of the results of evaluation and agreements through the country market)
⇩	
⑩ **Designate lottery numbers and bidding**(A qualified person)	Each eligible individual is assigned a lottery number and a tactic rate on each page
⇩	
⑪ **Shopping mall listing** (Ordering Unit Price and qualified delivery company)	Order Price and Qualified Procurement delivery shopping mall listing (through country market)

<Figure 5-2> Facility MAS Operation Preparation Process Procedure

① **Demand**	Demand from demanding organization
⇩	
② **Input quantity** (demanding organization) **Estimate of construction value** (system)	Enter the quantity on the unit price, calculate the construction cost by the system (automation), calculate the base price of the preliminary price (15 preliminary prices)
⇩	
③ **Fixed price** (system)	Determine preliminary price, which is the average of 4 preliminary prices (if it is a private contract, two lottery number will be calculated)
⇩	
④ **Decide winner** (system)	The bidding amount and the winning rate are ranked in order according to the pre-stored bidding rate
⇩	
⑤ **Decision of the successful bidder**	Change successful bidder on a voluntary basis
⇩	
⑥ **Determination of contract amount with contractor** (system)	Decide successful bidder who is on the lowest ratio (87.745%) (The private contract shall be applied to the contract price at the scheduled price.)
⇩	
⑦ **Initiation and contract execution**	Launch of construction (or service) and execution of contract
⇩	
⑧ **Evaluation and payment** (demanding organization)	The demanding organization shall notify the procurement agency of the contract performance evaluation result. Payment is offered by the demanding organization
⇩	
⑨ **Contract** (or agreement) **Post management** (Delivery organization)	Unit Price, agreement, performance result

<Figure 5-3> Facility MAS Operation Execution Process Procedure

5.2. Establishment of legal basis for facility MAS

5.2.1. Necessity of legal ground and revision direction

The UK Framework Agreement has enabled many supplier contracts for facility construction and all A&E sectors, however the US has not been activated due to conflict with laws related to US construction even if they have been able to construct and A&E support for MAS. In the construction industry, conflicts of interest between stakeholders are inevitable, so it is essential to establish a legal basis in Korea to apply the facility MAS.

In the current procurement business, a number of supplier contracts are implemented through Article 5 (Exceptions to Contract) of the Procurement Business Act and Article 7 Clause 2 (Multiple Supplier Contracts) of the Enforcement Decree of the Procurement Business Act. According to Korea Procurement Research Institute, "A Study on Advancement of Service Sector Provision System", MAS is classified as a contract to suggest about revising the law. However, since the US MAS and the UK Framework Agreement also select a large number of suppliers after the general competition, the multiple supplier contract does not fall outside the scope of the general competition, which is the principle of the "Act on Contracts with the State Parties". Therefore, we would like to suggest the direction of amending the law as contract type.

5.2.2. Facilities MAS legislation amendments

The law requiring priority review is the "Act on Contracts with the State Parties".

Article 25 (Joint Contract) and the Article 25 Clause 2(Multiple Award Contract)" ① The head or contract officer of each central office shall notify the public of the demand when purchasing materials or when it is deemed necessary to satisfy diverse demand of the demanding organization, two or more persons are selected as contracting partners so that the contracting and manufacturing contracts with the same quality, performance, (Hereinafter referred to as "multiple award contract"). ② If a contract is to be made in accordance with clause 1, the contract shall be established by signing or stamping the contract with the respective official and contractor.

Next, the Presidential Decree, "Enforcement Decree of the Act on Contracts with Nation" should be reviewed. "Article 72 (Multiple Award Schedule) (1) The head of each central office or contract official shall make it possible for the person who intends to participate in the bid to view the contract amount in case the contract amount cannot be fixed in accordance with Article 25 and Clause 2. The method of concluding a contract under clause 1 and other necessary matters shall be determined by the Minister of Strategy and Finance. Even if the multiple award schedule contract does not specify the amount of the contract, the basis on the contract should be made and the multiple award

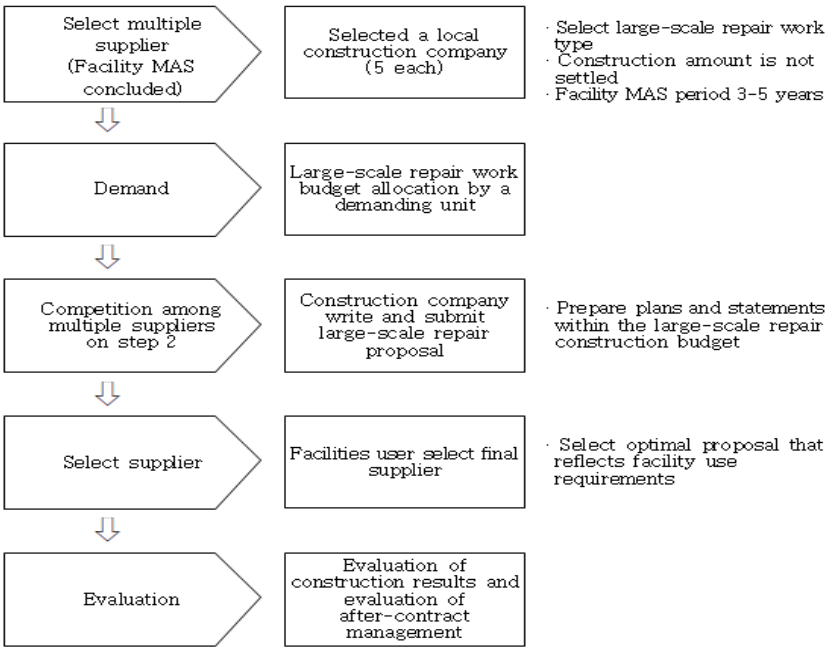
schedule contract should be laid down in detail in the form of contract.

In accordance with Article 18 (Bidding for Competition, etc.) of the same Act, ① In the event that it is difficult to prepare appropriate specifications in advance in the manufacture, purchase or contract of goods, or if it is deemed necessary due to the nature of other contracts, the head or contract official of each central office shall firstly submit a standard bid." For this article, it is necessary to revise the manufacturing/purchasing/contracting of goods" or "service contracts" to "manufacture/purchase of goods or contracts for construction/service contracts". In case of Framework Agreement in the UK, many suppliers are competing in the second step when the contract conditions are not decided yet. More than KRW 50 million is optional and more than KRW 100 million is obligatory in the supplier contract with many suppliers in Korea. In the case of contracts for elementary, middle and high school students, it is required to enter into a second level competition contract among a number of suppliers when it is over 20 million won.

5.3. Application of Large-scale Repair Facilities MAS

5.3.1. Concept of MAS Application for Large-scale Repair Facilities

The ultimate goal of introducing the facility MAS to large-scale repair work is to select a large number of suppliers (construction companies) before large-scale repair work and immediately carry out large-scale repair work when demand occurs. As shown in <Figure 5-4>, it is necessary to establish concept by step. When the facility MAS is concluded, the construction company will be entitled to carry out large-scale repair work without confirming the amount of construction.



<Figure 5-4> Concept of Large-scale Repair Facility MAS Application

Detailed step-by-step implementation procedures should select the type of large-scale repair work. This should be applied in consideration of the characteristics of the military based on the preparation process of the facility MAS and the operational procedures of the procurement research institute of the Korea Procurement Research Institute in the Study 5.1.1.

5.3.2. Selection of Major Repair Type

The large-scale repair work to apply facility MAS can be carried out by two or more construction companies. General large-scale repairs should be targeted. Multiple Award Schedule contracts should allow one item to be supplied by two or more suppliers. Therefore, construction of a facility that can be constructed only by a specific construction company or a contract must be excluded from the target by patented technology and new technology.

It is necessary to review the standard repair cycle of facilities considering repair method, repair cycle and repair ratio of each facility according to "Guidelines for Implementation of Military Facilities Project". It is a facility construction that should be selected for large-scale repair work first. According to the standard facility repair cycle, it is classified by type of roof, exterior wall, window, etc. inside the building, and ceiling, inner wall, floor, and so on. Also, detailed construction of electrical, fire-fighting, telecommunication, and mechanical equipment is included in detail.

According to Jeong. J. G. (2012), who has studied the repair work of the ○○○ military through the budget for the repair of the military facilities, the result of the repair work of the ○○ military for 5 years was as shown in <Table 5-1>[37] It was analyzed that the repair of facilities was 1.32 billion won, the repair of mechanical equipment was 1.01 billion won, and the repair of electric facilities was 1.01 billion won. Therefore, it is essential to reflect the special work such as repair of general facilities, mechanical equipment including water supply and heating and electric work to operate various electric and electronic products.

[37] Jeong, J. G., (2012). A Study on the Actual Conditions of Maintenance Budget for Military Facilities, p24

<Table 5-1> Status of repair work according to unit and size of military facilities

Work	Inland troops(30troops)				Coastal troops(60troopps)			
	Number		Price(Billion)		Number		Price(Billion)	
Total	306	44(%)	20.3	45(%)	390	56(%)	24.8	55(%)
Leak	18	5.9	1.2	5.9	23	5.9	1.6	6.2
Waterproof	17	5.6	1.1	5.3	20	5.1	1.7	7
Equipment	102	33.3	4.2	20.8	163	41.8	5.9	23.9
Facility	75	24.5	7.3	35.9	55	14.1	5.9	23.7
Sewer	8	2.6	0.6	3.1	18	4.6	3.4	13.7
Electricity	76	24.8	4.2	20.9	105	26.9	5.9	23.9
Window	10	3.3	1.7	8.1	6	1.5	0.4	1.5

5.3.3. Facility MAS Operational Preparation Improvement

Facility MAS preparation process is to select several construction companies before major repair work. Unlike the conventional method of selecting a construction company after a large-scale repair work budget is assigned, it is an important step to shorten the time required for a construction contract by selecting a large-scale repair construction company and concluding facility MAS.

1) Checking demand and establishment of order planning

The facility user calculates the repair demand by examining the facilities standard repair cycle of the "Guidelines for the Implementation of the Military

Facilities Project" based on the completion time of the auxiliary facilities. The Contracting Department will establish an ordering plan based on the results of the large-scale repair work over the past five years.

2) Order Details

In order to grasp the demand and establish the order plan, the maintenance detail should be calculated by standard unit cost and standard of estimate which are currently using the large-scale repair work demand. The large-scale repair work is reflected in the statement so that the design and construction work can be carried out in detailed statement.

3) Preliminary announcement of orders to the E-Procurement System

The bidding qualification is to be promoted by the local bidding of the city or province where the facility is located. Professional construction companies, electrical construction companies, information and communication construction companies, and machinery and equipment construction companies, which are required for large-scale repair work, are registered in all over the country. Refer to <Table 5-2>[38], <Table 5-3>[39], <Table 5-4>[40], <Table 5-5>[41]. If the construction company is located outside the area, there may be

[38] KOSCA(Korea Professional Construction Association). http://www.kosca.or.kr/KS/KS020201.asp?area=00
[39] ECIC. http://www.ecic.kr/AD/AD0501.jsp
[40] KICA(Korea Information and Communications Corporation Association
[41] KMCCA(Korea Mechanic Construction Contractors Association). http://www.kmcca.or.kr/ks/sidoMemberStatus/sidoMemberStatus.do?

restrictions on timely action. Because it is located at a long distance from the geographical area, there is a possibility of contracting illegal subcontract with the construction company adjacent to the facility use unit.

<Table 5-2> Distribution of professional construction company registration

Division	Interior	Coating	Metal window	Roof drying	Water and sewage	Paving work	Steel structure
Nationwide	4,787	2,667	6,272	752	7,169	2,263	682
Seoul	1,709	368	763	178	992	512	147
Busan	340	111	265	41	258	106	35
Daegu	196	68	204	43	141	53	21
Incheon	200	108	259	23	299	102	28
Gwangju	221	68	205	21	121	45	14
Daejeon	140	63	152	21	174	45	15
Ulsan	60	64	122	12	121	40	26
Gyeonggi	782	580	1,396	171	1,357	417	122
Gangwon	111	162	340	18	376	102	8
Chungbuk	129	138	309	35	459	103	34
Chungnam	148	174	382	34	507	130	38
Jeonbuk	113	158	358	17	455	122	30
Jeonnam	119	161	433	32	536	160	53
Gyeongbuk	198	202	453	59	700	139	51
Gyeongnam	239	176	447	37	472	142	51
Jeju	82	66	184	10	201	45	9

<Table 5-3> Local distribution of electrical construction companies

Division	Total	Sectors		Organization type	
		Specialty	Diversity	Individual	Corporation
Nationwide	15,043	11,483	3,560	2,131	12,912
Seoul	2,026	1,236	790	265	1,761
Busan	775	583	192	117	658
Daegu	578	428	150	93	485
Incheon	609	545	64	123	486
Gwangju	453	353	100	3	450
Daejeon	398	345	53	25	373
Ulsan	308	240	68	48	260
Gyeonggi	3,117	2,255	862	531	2,586
Gangwon	769	606	163	142	627
Chungbuk	614	482	132	94	520
Chungnam	975	871	104	63	912
Jeonbuk	842	695	147	109	733
Jeonnam	1,140	904	236	35	1,105
Gyeongbuk	1,123	865	258	179	944
Gyeongnam	1,003	843	160	219	784
Jeju	313	232	81	85	228

<Table 5-4> Registration Status of Information and Communication Construction

Division	Total	Sectors		Organization type	
		Specialty	Diversity	Individual	Corporation
Nationwide	8,927	8,263	664	6,580	2,347
Seoul	2,470	2,376	94	1,878	592
Incheon·Gyeonggi	2,218	2,102	116	1,636	582
Busan·Ulsan·Gyeongnam	1,056	892	164	804	252
Daegu·Gyeongbuk	762	638	124	578	184
Daejeon·Chungnam	755	726	29	545	210
Gwangju·Jeonnam	659	625	34	428	231
Gangwon	338	311	27	227	111
Jeonbuk	274	245	29	212	62
Chungbuk	241	221	20	167	74
Jeju	154	127	27	105	49

<Table 5-5> Registration Status of Machinery Construction by Each Industry

Division	Company Number	Number of Enrollment		
		Sum	machine	Gas
Nationwide	7,212	7,629	6,319	1,310
Seoul	1,295	1,378	1,157	221
Busan	442	461	374	87
Daegu	342	352	290	62
Incheon	333	361	288	73
Gwangju	231	242	202	40
Daejeon	251	266	225	41
Ulsan	277	305	249	56
Sejong	71	75	68	7
Gyeonggi	1,546	1,658	1,305	353
Gangwon	232	240	209	31
Chungbuk	223	234	196	38
Chungnam	330	342	290	52
Jeonbuk	263	276	228	48
Jeonnam	409	437	379	58
Gyeongbuk	417	439	381	58
Gyeongnam	441	453	381	72
Jeju	109	110	97	13

The term of the contract requires a multi-year contract type that can be extended for one to three years, based on three to five years. The military should strictly control the access of outsiders due to security-oriented work. When a large number of people enter the military, it takes a lot of time to check the identity of the passengers. In addition, the access of outsiders usually takes place even after the contract, which will have a great influence on the construction start time. Therefore, a multi-year contract type is suitable

for a small number of people to enter the military. The administrative procedures needed for identity background investigation for military access should also be shortened. And if you go to the military for a long time and get a large-scale repair work, the construction company may accumulate experience and reasonably understand the requirements of the facility use. When large-scale repair work is carried out, the satisfaction level of the facility use also increases.

4) Background Investigation

It shall be carried out by contract department or construction department when making a contract regarding facility MAS for large-scale repair work and give approval for personal who are required to enter the military in order to carry out the large-scale repair work. This will be implemented as a precautionary measure so that construction company personnel can access the military immediately when large-scale repair work is required. It will promptly notify when there is change of construction company manpower to prevent the worker suspected of illegal subcontracting from entering the large repair work in advance.

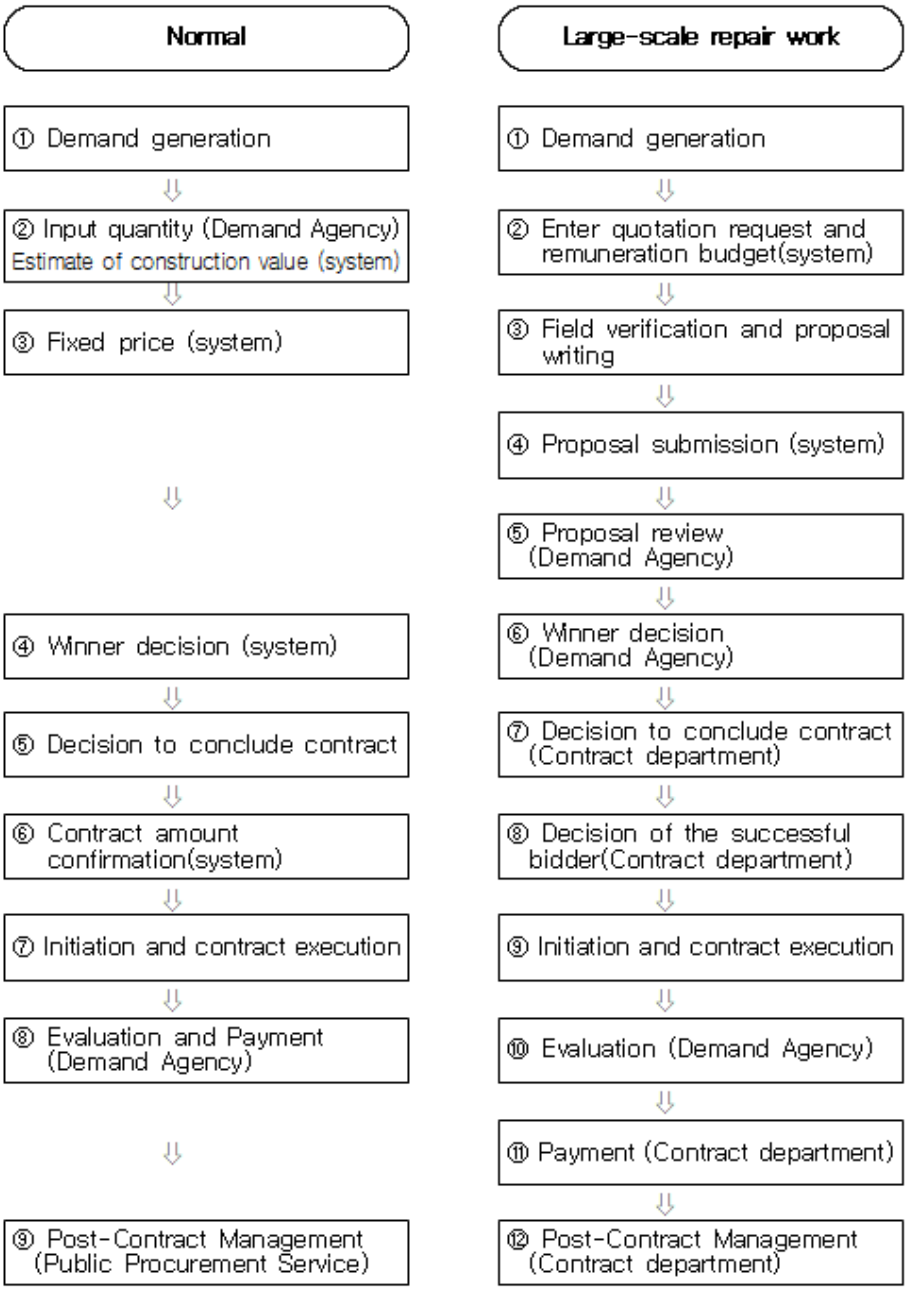
In addition, the procedures for after the preliminary announcement of order placement in the country market shall be carried out in accordance with the procedure of preparation for facility MAS operation in the Korea Procurement Research Institute "A Study on Advancement of Service Sector Proposal System".

5.3.4. Facility Improvement of MAS operation execution process

Facilities MAS operational preparation is a business area led by the military contracting department, which is a procurement agency, and serves as a support for facility use and construction department. However, the process of executing facility MAS operation is a business area led by facility use and construction department, which are demand organizations. It is an important step to apply facility MAS to large scale repair work. In order to apply the operation procedure of the facility MAS operation execution proposed by the Korea Procurement Research Institute to the military scale repair work, modification of the procedure as shown in <Figure 5-5> is required to reflect the specific conditions of the military and characteristics of each construction.

1) Facility use demand

If the facility use recommends the repair to a senior unit in November, X-1year, the project will be confirmed in January, X-year and the execution order will be issued to the facility use. The facility use military units cooperate with the supporting engineer units to establish the scope of large-scale repair work. They establish a direction for future large-scale repair work.



<Figure 5-5> Facility MAS Operation Execution Process Large-scale repair work application (plan)

2) Quotation request and repair budget

The facility use unit notifies the contractor of the large-scale repair work total budget and site confirmation date and request a large-scale repair work estimate through the system. When the facility use unit and the engineer unit calculate the repair work details of the electric work, the information communication work, and the mechanical equipment work, it is highly likely that the error of repair work and the omission factor are likely to occur. Therefore, it is efficient for the expert engineer in the field to calculate the repair details. This minimizes design changes due to design and site discrepancies, and can take immediate action when design changes occur. In order to do this, large-scale repair work should be included in the details of the repair work so that the construction company becomes a contract for design and construction. It is possible to shorten the contract period due to the separate ordering of the existing design and construction.

3) Check the site and proposal writing

The construction company that concluded the facility MAS through the system confirms the large-scale repair work confirms the date of confirmation and the repair work site. At this time, the facility use unit presents the requirements that the purpose of the large-scale repair work that can be implemented. The construction company shall prepare and submit a proposal containing a large-scale repair work plan and a statement that applies the inspection rate of the projected MAS within the total budget of the large-scale

repair work.

4) Receipt of proposal

The contract department receives the proposal submitted by the construction company and notifies the facility use unit.

5) Deliberation of Proposal

Facility use units that received the proposal will establish a large-scale rehabilitation proposal review plan and discuss the proposal with the contracting unit. The proposal deliberation induces a second stage of competition among a large number of construction companies. The focus is on whether the proposal has been written to implement the maximum value required by the facility use unit and whether the entire allocated large-scale maintenance budget can be concentrated on repair work. The construction units advise on the technical field whether the requirements of the facility use unit are fully reflected.

6) Decision of successful bidder

The facility use unit selects the priority according to the results of the large-scale repair proposal review and notifies the contracting department of the highest priority construction company. Thus, the facility use unit provides an opportunity to take a leading role as a user of large-scale repair work.

7) Decision of successful bidder on contract

The Contracting Department shall notify the contractor of the selected contractor as the winner according to the result of the proposal review

conducted by the facility use unit. A construction company where has not won a bid can confirm the result through the system.

8) Contract

A construction company selected as a large-scale repair construction company contracts with the contract department through the system.

9) Initiation and contract execution

The facility use unit determines the time of large-scale repair work with the construction company and the construction unit places the construction supervisor on the site to confirm and supervise the construction as it is designed. Procedures for the progress of the large-scale repair work is carried out in accordance with the Ministry of National Defense's "Guidelines for Executing the Military Facilities Project", and detailed procedures is omitted in this study.

10) Evaluation

After completion of large-scale repair completion inspection and maintenance work, the facilities use unit shall carry out the evaluation as shown in <Table 5-6>. In the past, it was a limited role for the facility-use unit to take over facilities that had undergone large-scale repair work. However, it is necessary to shift to an active role by evaluating the construction results of construction companies. If the evaluation result of facility utilization unit occupies a large part as the evaluation criteria of extension contract, the construction company will endeavor to improve the quality of construction to

raise the satisfaction level of facility use unit.

<Table 5-6> Evaluation Standard of Construction Result

· Satisfaction with construction quality · Large-scale repair work proposal and construction agreement · Completion of large-scale repair work · Reflecting the requirements of facility use units · Whether the design change occurred · Whether or not the personnel notified from the contract department · Large-scale repair work delays due to the application for unannounced personnel · If the facility is not required to postpone the construction period · Whether the balance of large-scale repair work budget is generated · User education on the contents of large-scale repair work on facility use unit

11) Payment

The contract department will pay the contract price to the contractor when notified of the completion documents of the large-scale repair work and the evaluation of the facility use unit.

12) Contract post management

As for the after-contract management, the large-scale repair work performance of the construction company that has the facility MAS concluded every year is evaluated as shown in <Table 5-7>, and the excellent construction company gives the contract extension opportunity. And the bad construction company will be limited to get the opportunity to participate in the next facility MAS. In addition to the large-scale repair work performance as well as the evaluation of submission of proposals through post management, we tried to actively participate in the contract. However, companies with no contractual performance should not be disadvantaged.

<Table 5-7> Evaluation Standard for After-Contract Management

· Performance of proposal on demand after concluding facility MAS · Performance of proposal after confirmation of large-scale repair work · Evaluation result of facility use · Check whether air delay occurs · Check whether it is carried out as illegal subcontracting · Civil complaints related to large-scale repair work · The defects occurred during the defective repair period and the results of the measures

At the time of the initial contract, five companies should be selected, such as professional construction industry, electric construction, information and communication construction, and machinery and equipment construction. In addition, there should be no cases that the contract is terminated or the contract for extension is abandoned and the large-scale repair work cannot be executed in a timely manner by selecting one or two additional construction companies in a yearly basis.

If an excellent contractor keeps contracting for an extended period of time, it will be possible to carry out large-scale repair work efficiently and timely in the military facilities by the experts who understand the military characteristics and have accumulated experience.

Chapter 6. Conclusion

6.1. Research Summary and Contribution

Currently, the large-scale repair work (hereinafter referred to as 'repair work') is scheduled for a period of time due to administrative procedures from designing and construction separation contracts after the budget allocation. Therefore, there is a limit in completing the construction at the time requested by the facility use unit (demand organization). In addition, the military contracting department (procurement agency) and the construction company (supplier) are wasting time and social expenses due to the repetitive construction contract work and the bid participation. Therefore, this study introduces the multi award contract in the advanced countries such as the United States and the United Kingdom to the military repair work, and maintains the security that is important in the characteristics of the military. In addition, a limited construction company participates in the repair work and the excellent construction company continues the repair work. By doing so, we propose a solution to extend the life span of the military facilities to which the national tax is applied. The results of this study are as follows.

In order to apply the multi award contract (facility MAS) to public institutions including domestic army, it is essential to establish a system. Currently, there is no basis for concluding a multi award contract in the “Act on Contracts with the Nation and the Enforcement Decree of the Act.”

Therefore, the amendment of the national contract law for the common application to public institutions and the revision of the law for the second stage competition for the final construction company selection were drawn.

For a multiple award contract, the contractor had to select in advance of the repair work. For the existing repair work, budget is allocated in advance. However, MAS method can save time compared with the method of selecting the construction company. The construction company shall design the repair work to include the design cost. The construction contract will also shorten the period of time required for the start of repair work.

The construction company competes primarily with construction companies of the same type in the local area for the purpose of concluding multiple award contract based on the item name of the order. Many contractors with multiple supplier contracts refer to the requirements of facility use units for final bidding for repair work. We proposed a repair contract proposal that can realize the maximum value at the maximum amount within the range of the repair work budget secured by the facility use unit and the application of the multiple award contract including the second round of competition between construction companies.

The facility using unit reviews whether the facility's application requirements are effectively reflected when the proposal is submitted by the construction company and whether the repair work budget allocated by the facility use unit can be concentrated on the old facilities or damaged facilities.

It also gives the right to select the last successful bidder. After completion of the repair work, the construction results will be evaluated and notified to the contract department, then they receive the contract price. The opportunity to participate in facility use units has been expanded so that user-centered repair work can proceed.

Excellent construction company can proceed with extension contract through evaluating construction result of facility use unit and after-contract management evaluation in contract department. Bad contractors will have limited contract and opportunities for future participation. On the other hand, good contractors can continue to participate in repair work. For the final stage of construction work, they proceed to the second step. Through this, it is expected that the repair work of military facilities will be carried out efficiently and timely by the expert technical knowledge who understands the military characteristics and have accumulated experience.

6.2. Limitation and Further Study

This study should deal with the legal review of amendments to apply multiple award contracts to repair work. In addition, it is necessary to quantify the evaluation score specifically for the evaluation criteria of construction result evaluation and contract management. As a future research project, it is required to consider the appropriate scale of repair work for multiple award contracts, reviewing appropriateness through the frequency of repair work, criteria and procedures for evaluating qualified personnel, criteria and procedures for qualifying evaluation and initial contract term and extension contract based on base data in the further research.

Bibliography

Son., C. S., Son, B. S., (2004). Maintenance manpower estimating model for military installation. Journal of Architectural Institute of Korea, 23(2), 511-514.

Yoon, H. H., Oh, C. D., (2010). An Analysis of Outsourcing for Maintenance Management on the Military Facility. Journal of Architectural Institute of Korea, 30(1), 333-334.

Lee, T. H., (2009). Improvement of small-scale maintenance management system of army barracks. Master thesis. Graduate School of Architecture. Chung-Ang University.

Lim, J. S., (2004). Improved maintenance contract system for military facilities. Master thesis. Graduate School of Architecture. Chung-Ang University.

Jeong, J. G., (2012). A Study on the Actual Conditions of Maintenance Budget for Military Facilities. Master thesis. Graduate School of Architecture. Chonnam National University.

Choi, Y. H., (2008). Evaluation and Improvement of Maintenance Characteristics of Barracks Facilities. Master thesis. Graduate School of Architecture. Hannam University.

PPS(Public Procurement Service), Korea Procurement Research Institute., (2007). A Study on the U.S. Multiple Award Schedule for the Expansion of Korean Firms in the U.S. Government Development Market

PPS(Public Procurement Service), Korea Procurement Research Institute., (2014). A Study on the Advancement of the Procurement System in the Service Sector

Act 12860 (2014 12.30). the Act on Contracts with the State as a Party.

Presidential Decree No. 26975 (2016.2.11). Enforcement Decree of the Contracts with the State as a Party

Presidential decree No.27037 (2016.3.11). Enforcement Decree on procurement projects

Ministry of National Defense (2014). 2014 Defense White Paper

Ministry of National Defense (2015). Annual Report of National Defense Statistics 2015

Order No. 1520 (2013.3.5) of the Ministry of National Defense (MND). Order of Management of the Military Facilities Project

Ministry of National Defense (2013). Guidelines for Implementation of the Military Facilities Project

ROK Army (2015). Facilities Operation Regulations

Appendix

A. Status of Defense Budget by Year

Year	Defense budget (Billion)	Defense Expenses by GDP(%)	Defense Expenses by Government Finance(%)	Growth rate of Defense Expenses (%)
1980	22,465	5.69	34.7	46.2
1981	26,975	5.47	33.6	20.1
1982	31,207	5.49	33.5	15.7
1983	32,741	4.85	31.4	4.9
1984	33,061	4.25	29.6	1.0
1985	36,892	4.23	29.4	11.6
1986	41,580	4.08	30.1	12.7
1987	47,454	3.95	29.6	14.1
1988	55,202	3.83	30.0	16.3
1989	60,148	3.68	27.3	9.0
1990	66,378	3.36	24.2	10.4
1991	74,764	3.13	23.8	12.6
1992	84,100	3.08	25.1	12.5
1993	92,154	2.97	24.2	9.6
1994	100,753	2.75	23.3	9.3
1995	110,743	2.58	21.4	9.9
1996	122,434	2.54	20.8	10.6
1997	137,865	2.60	20.7	12.6
1998	138,000	2.63	18.3	0.1
1999	137,490	2.38	16.4	0.4
2000	144,774	2.28	16.3	5.3
200	153,884	2.24	15.5	6.3
2002	163,640	2.15	14.9	6.3
2003	175,148	2.16	14.8	7.0
2004	189,412	2.16	15.8	8.1
2005	211,026	2.29	15.6	11.4
2006	225,129	2.33	15.3	6.7
2007	244,972	2.35	15.7	8.8
2008	266,490	2.41	14.8	8.8
2009	289,803	2.52	14.2	8.7
2010	295,627	2.34	14.7	2.0
2011	314,031	2.36	15.0	6.2
2012	329,576	2.39	14.8	5.0
2013	344,970	2.42	14.3	4.7
2014	357,056	2.38	14.4	3.5

B. Status of Improvement of Military Housing Facilities

1. Statistical table

Division	~2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Army Barracks (Battalion)	51	60	131	41	50	111	118	61	43	12	-
Naval · Air Force Barracks	52	75	159	82	82	122	70	159	85	12	6
GOP Barracks	336	100	81	75	90	275	-	-	-	13	64
Military apartment	36,894	3,991	5,611	3,111	2,980	5,440	7,649	748	367	598	1,282
Officer dormitory	5,647	3,000	3,593	6,054	7,219	11,357	21,769	5,182	8,568	2,024	2,942

2. Statistical Explanation Materials

Division	Contents
Statistic name	Status of Improvement of Military Housing Facilities
Purpose (Background)	Evaluate improvement achievements by year, use as reference data for mid-term planning and budgeting, and disclose to the public
Source of data	Ministry of National Defense (Report on the execution of each military)
Date of Creation	December 31, 2014
Term Description	- Barracks : It refers to a facility with a combination of residential and administrative functions in one of the buildings in the barracks. It was generally called the 'quarters' or 'barracks' before it was upgraded to a bed-type barracks dormitory. - Military apartment : Houses for families of commanders, married officers, and NCO. - Officer dormitory : Unmarried officers, married officers who can not live with their families due to their regional characteristics (eg, remote area, island, etc.), accommodation for officers during education and dispatch
Interpretation	- Barracks : Since 2004, it has been promoted to improve the conditions of service for soldiers by improving the poor housing conditions by the gap between the growth environment of new generation soldiers and the military residential environment. He is. Further restructuring of the military dwelling is necessary through the adjustment of the military restructuring plan (dismantling or surviving units) following the change of the basic defense reform plan - Military apartment : In line with the trend of social development, we are continuously improving old / narrow housing facilities and improving the desire for military service. Continuous improvement due to changes in military officers' gaps and the replacement of existing old screws - Officer dormitory : Securing short-term facilities and improving old facilities to maintain emergency preparedness and stable service conditions. Continuous improvement due to changes in military officers' gaps and the replacement of existing old screws
Note / Other	- Due to the nature of facility construction, most of the multi-year projects (more than 2 years) are mostly based on ordering / notification to ascertain the accurate performance of the year - Military apartment and officer dormitory were drafted based on the total target amount up to the defense statistics in 2014, but from the 2015 defense statistics on defense will be based on actual holdings. - As of the end of 2014, there are 28,671 Military apartment and 77,355 Officer dormitory

C. Defense facility maintenance cost trend

1. Statistical table

(unit : Billion / %)

Division	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Sum	3,424 (100)	3,834 (100)	4,330 (100)	4,702 (100)	5,733 (100)	5,989 (100)	6,104 (100)	6,909 (100)	7,326 (100)	7,332 (100)
Utilities	2,086 (60.9)	2,291 (59.8)	2,384 (55.1)	2,478 (52.7)	2,614 (45.6)	2,844 (47.5)	3,037 (49.8)	3,578 (51.8)	3,732 (50.9)	3,752 (51.2)
Facility maintenance cost	1,338 (39.1)	1,543 (40.2)	1,946 (44.9)	2,224 (47.3)	3,119 (54.4)	3,145 (52.5)	3,067 (50.2)	3,331 (48.2)	3,594 (49.1)	3,580 (48.8)

2. Statistical Explanation Materials

Division	Contents
Statistic name	Defense facility maintenance cost trend
Purpose (Background)	It is utilized as a reference material for the mid-term planning and budgeting by year, and is open to the public.
Source of data	Ministry of National Defense (Report on the execution of each military)
Date of Creation	December 31, 2014
Term Description	- Utilities : Electricity charges and water and sewage charges used for military service - Facility Maintenance : Maintain the functionality, usability, and convenience of the original facility through maintenance / reinforcement for the phenomenon of aging / breakage / deformation due to time lapse, use or external impact after completion of the facility. It refers to all activities to be managed.
Interpretation	- For the maintenance and operation of the facility, it can be seen that the proportion of utility charges, which is expenditure other than repair costs, is 51.2%. Therefore, energy conservation efforts to reduce utility bills are urgent, suggesting that the policy of expanding / promoting energy saving facilities should be pursued in the medium to long term. - Public utilities have recently increased (4-5% per year), and public utilities have risen sharply (by 9.4% in 2011 and 2013), and overall utility charges are on the rise. - The increase in facility maintenance and operation costs is attributable to the modernization of facilities and the increase in the quantity of water, the increase in the retention of old facilities, and the increase in load appliances.
Note / Other	- Estimated amount : Public utility(execution amount), maintenance cost of the facilities are estimated to be 2005 ~ 2013 (budget amount), 2014(execution amount)

국 문 초 록

병영시설 현대화를 위해 2003년부터 국방부는 군사시설 현대화를 정부 사업으로 선정하여 추진하여 왔다. 병영시설 현대화는 군사시설의 규모와 복잡성을 증대시켜 왔으며, 이에 따라 시설물의 수명을 연장시키기 위한 지속적인 유지관리와 이에 대한 다양하고 복잡한 관리 기술들이 요구되고 있는 상황이다.

이 논문의 목적은 지속성이 요구되는 군 시설 유지관리 업무의 계획 및 수행에 적합한 개선 방안으로 미국의 Multiple Award Schedule과 영국의 Framework Agreement와 같은 해외 제도를 소개하는 데 있다. 이를 통하여 본 논문은 향후 효율적이고 적시적인 유지관리에 대한 요구가 증대될 것으로 예상되는 군 시설 유지관리 업무에 있어서 더욱 개선된 업무 수행 방안을 제안하였다.

군 시설 유지관리에 다수공급자계약을 적용하기 위해서는 “국가를 당사자로 하는 계약에 관한 법률”과 그 시행령을 개정함으로써 사전에 법적 근거가 마련되어야 한다는 것이 확인되었다. 보수공사가 지체없이 수행되고 공사 간 설계변경을 최소화하려면 설계시공일괄발주가 필수적이며, 사용부대 만족도 및 시공 품질 향상을 위해 사용부대가 시공업체를 선택하고 공사에

대한 평가 결과를 차후 계약에 반영함으로써 적절한 시공업체가 유지보수공사에 참여할 수 있도록 할 수 있다.

본 논문은 군 시설 업무의 특수성을 고려하여 다수공급자계약을 군 시설 보수공사에 적용하는 방안을 제안한 데에 의미가 있으며, 나아가 군 시설 보수공사의 효율적인 수행을 위한 제도개선방안을 연구하는데 있어 기초자료로서 활용할 수 있다. 향후 다수공급자계약으로 진행할 보수공사의 적정 규모, 공사 유형별 적정성 검토, 적격업체 선정 및 평가기준 등에 대한 연구가 추가적으로 수행된다면 더욱 효과적인 제도가 될 수 있을 것이다.

키워드: 군 시설, 다수공급자계약, 설계시공일괄발주

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