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# A Study on Construction Management Contract for Construction Project in Japan

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Abstract Construction projects based on Construction Management Contract (CM Contract) have been spread out in Japanese public works. Under the project based on CM contract, “Process control” is necessary. By “Process control”, transparency of project implementation is expected to be improving. This matter contributes to recover nation’s confidence in improving transparency in the construction industry.

Japanese construction contract is based on two-party system- Owner and Contractor. To implement CM contract in Japan, suitable environment to integrate the function of the Construction Manager (CMR) as third party is necessary. This research reviewed and revised “Standard Form of Construction Management Agreement between Owner and Construction Manager” and “Standard Form of Contract for Public Construction Works” based on three-party system established in previous study. Furthermore, “Standard Form of Design Agreement between Owner and Designer” based on CM contract was tried to established in this study.

**Key Words :** Construction Manager, CM Contract, Claim Document, FIDIC

## 1. Introduction

Construction projects based on Construction Management Contract (CM Contract) have been spread out in Japanese public works. Ministry of Land Infrastructure and Transportation (MLIT) aims to develop transparency, to secure quality and to reduce cost by introducing CM Contract. Project execution based on CM contract needs “Process Control” to keep transparency.

Examples of public works based on CM Contract are Moriyoishizan-Dam and Isawa-Dam construction projects executed by Tohoku Regional Bureau, MLIT. These projects have been monitored continuously from viewpoint of effect and problem of CM Contract. Many suggestions to spread out CM Contract in Japan can be found out from these monitoring.

“Standard form of Contract for Public Construction Works in Japan” is based on two-party system. To spread out CM Contract, making basis for the participation of the Construction Manager (CMR) as third party is necessary. As a concrete measure, Construction Management Contract based on three-party system should be established.

By previous research by this research group, “Standard Form of Construction Management Agreement between Owner and Construction Manager” and “Standard Form of Contract for Public Construction Works” based on three-party system were established, referred to many Standard form of agreements in Japan and other countries.

This research is based on our previous research as mentioned above. Main propose of this research is to revise Standard Form of Contract of previous research to apply for civil works especially dam

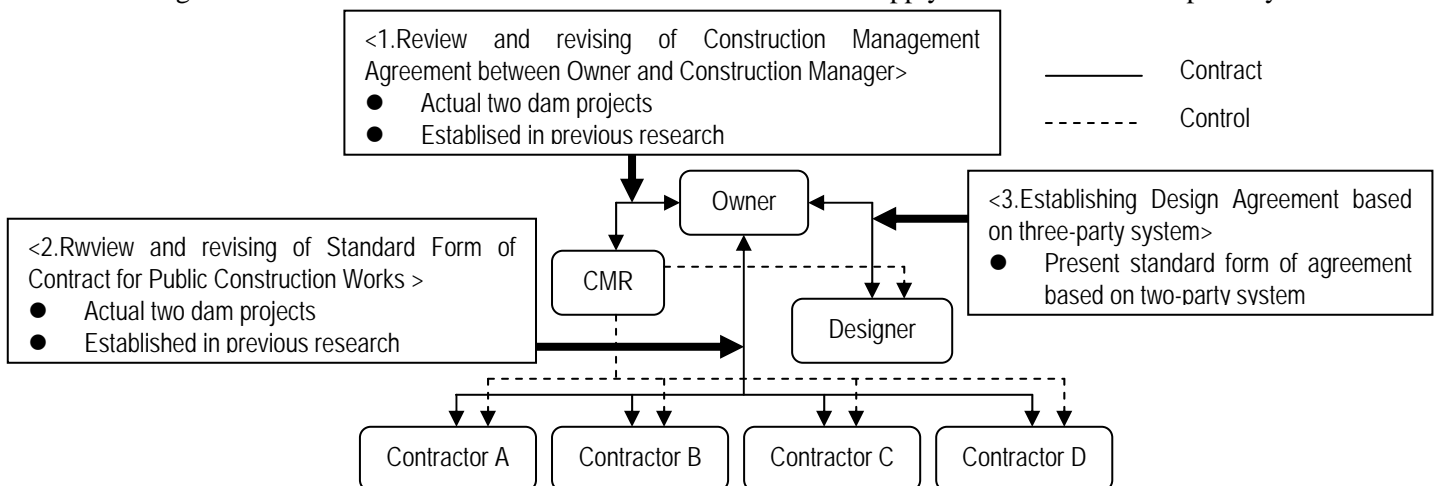


Figure 1: Subjects of this study

construction works.

In this study, hearing on persons concerned to Moriyoshizan-Dam and Isawa-Dam construction projects done by Japan Dam Engineering Center (JDEC) was referred. Objection by persons concerned were referred to find out problem and study measures for previous Standard Form of Contract of previous research from. Moreover, “Standard Form of Design Agreement between Owner and Designer” based on CM contract was tried to established in this study. This study is joint research project between JDEC and our research groups. Figure 1 shows subjects of this study.

## 2. Purpose to introduce CM contract

Purpose to introduce CM contract was reviewed in this study. Previous study of this research group, MLIT and other research groups has taken “developing transparency”, “keep quality” and “cost reduction” as purpose of introducing CM contract. Each purpose is restructured in this study. “Developing transparency” was the core to restructuring

First problem of transparency is the “transparency of construction industry from citizens’ viewpoint”. Previous study express following about transparency of construction industry.

- Japanese two-party system is the “Public sector lead private companies” style. In this style, relationship of owner and contractor has been complicated. This relationship makes rapid reconstruction of Japanese infrastructure.
- Two-party system adjusted market before 1<sup>st</sup> oil shock (1973). In those days, construction investment in Japan is increasing 15% per year. In such condition, construction industry need not market analyzing and getting citizen’s needs. Two-party system has made good performance by using its characteristics in such market condition.
- Construction investment has not increasing from 1978 (year of 2<sup>nd</sup> oil shock). A period from 1978 to start bubble economy in Japan (1986) called “Ice age of construction industry”. This period is thought to be that Japanese infrastructure has been almost prepared. Japan thought to be a developed country form at that time.
- Changing from high economic growth society to low economic growth society means changing of quantity and quality by citizen’s needs. Construction industry should develop infrastructure based on citizen’s opinion in such condition. At the same time, construction

industry should change their system that they show not only “result” but also “process” of construction projects.

- From viewpoint of transparency, it is difficult to execute public construction project only by two-party (Owner and Contractor). Construction project essentially have cooperation with owner and contractor based on contract in every stage of project. It has possibility that fair cooperation for concerned with the project thought to be cozy relationship by outsider.

By above states, from changing economical condition, citizens have started to require transparency of construction industry. But two-party system have limit to ensure enough transparency. There is the case that taking part in public project by third party who has enough knowledge is profitable to get citizen’s understanding.

Second problem of transparency is the “transparency of each concerned of project”. Principal objective of present Japanese public construction project execution system is “result control” which control complete date, final amount of money and quality. Fundamental measure to ensure transparency is changing principal form “result control” to “process control”. Changing to “process control” makes realize developing construction site management and engineering competitiveness of concerned (technical proposal and discussion of each other). Based on above condition, “keep quality” and “cost reduction” will be achieved.

Introducing CM contract is the one of the

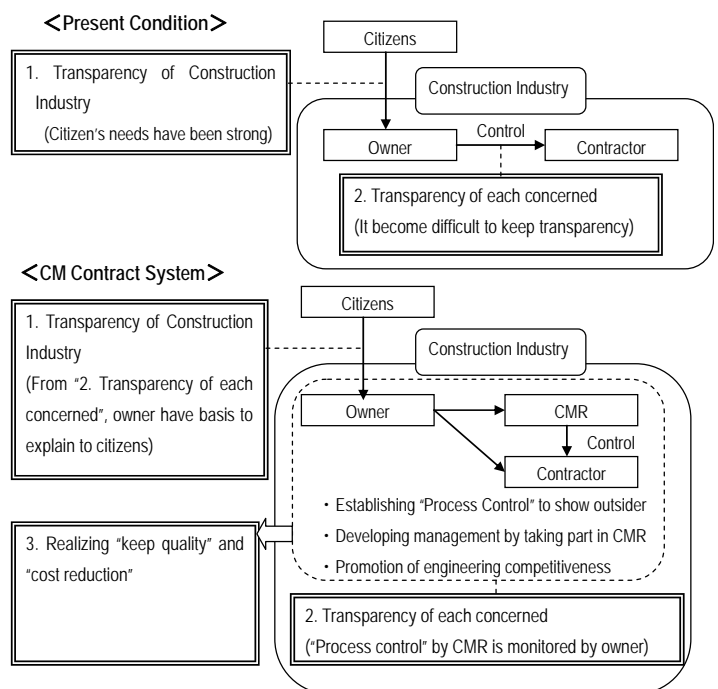


Figure 2: Purpose to introduce CM contract

measures for realizing “process control”. Taking part by a third party who has enough knowledge of engineering and management is expected to make developing construction site management and engineering competitiveness of concerned. In this system, owner changes from executer to procurer, he monitors construction work done by contractor and construction management by CMR. Based on above developing “transparency in the activities of each concerned of project”, “transparency of construction industry from citizens” will be realized. Figure 2 shows above story.

### 3. Problem of Tender-Contract system and Standard form of contract in Japanese public works

In this study, each clause of contract is revised. But before revising clauses, problem of tender-contract system and Standard form of contract in Japan should be reviewed. This chapter takes problem of tender-contract system and Standard form of contract, and makes basic policy to revise each clause of contract.

(1)Problems of tender-contract system in Japanese public works

a) Actual cost control is not necessary for present tender-contract system

As Bill of Quantity (BOQ) and other contact documents become detail, transparency of public works is developed. Changing of cost and schedule from unexpected event are estimated based on agreed BOQ and contract documents. Transparency is ensured by these records.

In the case of tender of international construction project, bidders are required to apply contact documents, BOQ, schedule, statement of works. These documents are reached about 1,000 pages. Owner checks these documents, and about top 3 companies are clarified as candidates for bidding. In clarification stage, based on clarification for unclear point of tender document, estimation for alternatives by bidders, and studying on validity of BOQ, etc, successful bidder is decided. To analyze problem and to manage cost and schedule based on such detail agreed matters, suitable level of engineering knowledge is necessary. Significance of existence of CMR is for this point. Based on such tender-contract system, CMR works from starting stage of project, transparency of project are realized.

The other hand, bidder submits only total cost in almost case of tender of Japanese public works. In almost case, successful bidder is decided from cost, and contract will be concluded. Moreover, “Standard Form of Contract for Public Construction

Table 1: Difference of contact documents for Japanese public works and international project based on FIDIC contract

Contract Document	Japanese Public Works	International Construction Project based on FIDIC
Condition of Contract	<ul style="list-style-type: none"> <li>● Applicable contents for usual project are stated in “Standard Form of Contract for Public Construction Works”</li> <li>● Applicable contents for each project are not stated. Generally, Condition of Contract is not changed for each project from “Standard Form of Contract for Public Construction Works”</li> </ul>	<ul style="list-style-type: none"> <li>● Part I (General Conditions) states applicable contents for usual project</li> <li>● Part II (Particular Conditions) states revised matter from Part I to apply each project.</li> <li>● Part I and Part II are unified to make Condition of Contract to stipulate right and duty of stakeholders</li> </ul>
Specification	<ul style="list-style-type: none"> <li>● General Specification</li> <li>● Special Specification</li> </ul>	● Specification
Priority of contract documents	<ul style="list-style-type: none"> <li>● Special Specification have high priority than General Specification</li> <li>● Order of priority between Condition of Contract and Special Specification are not stipulated. Reason is thought to be that concrete contents are stated in Special specification; same kind matters are not stated in Condition of Contract. In actual business, Condition of Contract has high priority than Special Specification.</li> </ul>	<ul style="list-style-type: none"> <li>● Priority of documents are stipulated as follows</li> <li>①The Contract Agreement (if completed)</li> <li>②The Letter of Acceptance;</li> <li>③The Tender;</li> <li>④Part II of these Conditions;</li> <li>⑤Part I of these Conditions; and</li> <li>⑥Any other document forming part of the Contract.</li> </ul>
Handling situations of Condition of Contract in actual business	Special information of each project is stated in Special Specification. Condition of Contract does not state actual procedure to solve problem. So, Condition of Contract does not referred in actual business.	Condition of Contract has high priority than Specification. Condition of Contract states special information of each project. Moreover, Condition of Contract states actual procedure to solve problem. So, Condition of Contract should referred frequently in actual business.

Works” says “The BOQ and Work Program shall not be binding on the Owner and Contractor”. In this condition, important significance of existence of CMR has possibly to be lost.

Existence of CMR itself can not ensure transparency and not reduce public work’s cost. In present trial two dam projects, above clause are kept unchanged. Moreover, construction management agreement between owner and contractor in these projects doesn’t require CMR to control project cost. As a result, effect of introducing CM contract thought to be limited, for example cost reduction from VE proposal by CMR. In hearing for concerned of two dam project, owner said that “from view point of cost control, change is not found out from previous two-party system”. Based on above Condition of Contract, owner’s above opinion thought to be correct.

b) Changing of Tender-Contract system and Clause of Standard form of contract

Public works can be defied as “Execution of annual budget”. Based on this character, cost control of Japanese public works place importance on final total project cost. Purpose of such kind control is to finish project within lump sum cost. View point on this control is total cost. This is different from general meaning of “Cost control” which monitors each cost of BOQ item.

Symbol of this matter is bidding without BOQ. It is difficult to manage project cost without detail

BOQ. Suitable estimation to each bid cannot be done without a detail BOQ.

Cost control require understanding of disbursements of each cost item; disbursements of each cost item are compared with BOQ or budget; cost items which is larger or smaller than budget are picked up; reasons and measures for such condition are found out and execution of measures. These data is applicable to next project. Cost control is defined as above cycle.

In Japanese public works, such kind cost control is contractor's inside jobs. Owner doesn't concern such kind of cost control.

To realize developing transparency and cost reduction, CMR should have function of cost control. In previous study, function of cost control was taken to CMR's duty in "Standard Form of Construction Management Agreement between Owner and Construction Manager". Moreover, to perform this function, "The BOQ and Work Program are a part of Contract Documents" was put on "Standard Form of Contract for Public Construction Works".

In the future, to realize developing transparency and cost reduction, these clauses have important meaning.

Moreover, to select appropriate contractor from viewpoint of cost and quality, submitting detail tender documents (e.g. BOQ, schedule, and statement of construction method) and clarification procedure are necessary.

## (2) Handling of contract documents and specification in Japan

BOQ, Schedule and Statement of method for project execution should be a part of contract documents and binding to both the parties. Moreover, state of Specification in Japanese public project should be changed. From view point of transparency, contents of Condition of Contract should be referred and used in daily work. But "Scope of works", "Documents to be submitted", "Procedure for change of works" and other contents are written in specification of almost Japanese public works. Most of above contents should be written in Conditions of Contract or other contract documents. In this condition, Conditions of Contract and other contract documents except specification are not used in actual work. Specifications of some project are made by execution level staff of project execution section. This situation can rapidly solve problems from negotiation of execution level staff of each organization. The other hand, in this situation, essence of contents of contract can be understood by execution level staff of each organization. Transparency of project becomes low.

In this situation, level of specification may become different by each project.

Therefore, important and normal matters of specification should be moved to Condition of Contract; and Condition of Contract should be separated to part I (General Condition) and Part II (Conditions of Particular Application).

Condition of Contract made in this study is corresponded to Part I.

Moreover, Condition of Contract should not be written by abstract word but be made from actual procedure to solve problems (ex. Submission deadline and party). Condition of Contract for Works of Civil Engineering Construction by FIDIC (Federation Internationale Des Ingenieurs Conseils) is a good reference of this matter.

"Standard Form of Contract for Public Construction Works in Japan (Japanese standard contract)" and "Condition of Contract for Works of Civil Engineering Construction by FIDIC (FIDIC contract)" are compared. FIDIC contract states actual procedure to solve problem in construction site, more than Japanese standard contract.

For example, in "Extension of Time for Completion" clauses, Japanese standard contract basically says "Any adjustment of the Construction Period shall be through consultations between Owner and Contractor". Foreseeable reasons, negotiation procedure and schedule to change schedule are not stated in Japanese standard contract. The other hand, FIDIC contract says states 5 items of foreseeable reasons to change schedule. Moreover, actual procedures are stated in FIDIC contract. Other clauses are also in same situation.

Difference of contract documents for Japanese public works and international project based on FIDIC contract are compared in Table 1.

Condition of Contract does not clearly state actual procedure to solve problem in Japanese public works. So, execution staff can implement their work without referring Condition of Contract. They almost can implement their work only with referring Special Specification. This condition is same as Design Agreement between owner and designer.

The other hand, Condition of Contract of International Construction Project states actual procedure to solve problem.

Based on detail procedure stated in Condition of Contract, documents are exchanged between owner and contractor though The Engineer as third party. This condition leave on record of project; and transparency will be developed.

Introduction of CM system aims to developing transparency. To realize this purpose, actual procedure to solve problem should be stated in not Special Specification but in Condition of Contract.

So, Standard procedures to solve problems in construction site which are stated in specification level documents in Japan are stated in new Condition of Contract revised in this study.

#### **4. Review and revising of Construction Management Agreement between Owner and Construction Manager**

Management Agreement between Owner and Construction Manager of actual two dam projects established in previous research are reviewed and revised in this study. Hearing on persons concerned to two dam project done by JDEC was referred to find out problems.

Main points are followings.

##### (1) Cost control

One engineer belongs to owner says that he cannot find out effect of introducing CMR from viewpoint of cost control. Condition of Contract and Specification for Construction Management does not state about cost control by CMR. In such condition, above opinion by owner side is thought to be properly.

First purpose of introducing CM system is to develop transparency. To realize this matter, CMR should have function of cost control.

##### (2) Fee for cost reduction from Value Engineering (VE) proposal

CMR sometimes realize owner's idea. Such case is difficult to share cost reduction between owner and CMR. Generally, CMR should get suitable fee to realize cost reduction idea from other party.

##### (3) Evaluation procedure for VE proposal

Condition of Contract and Specification of two dam project does not state about evaluator. Actually, owner estimate VE proposal. To develop transparency, third party should evaluate VE proposal. "Standard Form of Construction Management Agreement between Owner and Construction Manager" established in previous study does not include procedure of VE evaluation. In this study, procedure of evaluation of VE proposal is stated in revised Agreement.

##### (4) Claim evaluation

One engineer belongs to contractor says that he cannot find out notification procedure of their claim. Under present contract, if owner received claim document from contractor, owner decides "design change" by oneself based on negotiation and investigation. CMR evaluates such kind of claim documents under control of owner in two dam

projects. Condition of Contract and Specification for CMR of two dam project does not state procedure about evaluation procedure of contractor's claim. Such kind of procedure should state in Condition of Contract to dispel contractor's doubt.

Basic policy of claim evaluation procedure is "CMR evaluates Contractor's claim. Decision Making is done by owner"

#### **5. Review and revising of Contract for Public Construction Works between Owner and Contractor**

##### (1) Fee for cost reduction from VE proposal

CMR are expected to make many VE proposals by Owner side. Owner expects that VE proposal form CMR accelerates technical competitiveness between CMR and Contractor. However, consultant says that "Contractor may have negative image for VE proposal by CMR. Because total cost will be reduced". Present Specification of two dam projects state no incentive for contractor by VE proposal of CMR. To encourage VE from CMR, Contractor should get suitable fee to realize cost reduction idea from other party.

##### (2) Dispute resolution between each Contractor

Dispute between each Contractor should be solved by negotiation between concerned with such event. However, to keep transparency, detail of event and resolution procedure should be reported to Owner though CMR.

##### (3) Claim evaluation

To dispel contractor's doubt about evaluation procedure, claim evaluation procedure should state in Condition of Contract for Construction works. Moreover, duty of CMR in claim evaluation procedure should be stated.

#### **6. Establishing Design Agreement based on three-party system**

Based on present "Standard Form of Design Agreement between Owner and Designer", new Design Agreement on three-party system is established in this study.

Functions of CMR are incorporated to present agreement.

##### (1) Policy of reviewing in establishing Agreement

###### a) State Scope of Works in Design Agreement

Present Agreement does not state Scope of Works. Reason of such condition thought to be that such Agreement can use any type of works. However, an

Agreement is formally treated only to a particular condition. Such condition does not have enough transparency. So, general design works are stated in new Design Agreement based on present “Special Specifications of some Design works”

b) Advising for Designer and inspection of Design Document by CMR in design stage

Main duty of CMR in design stage is to advise the Designer. Followings two cases are prepared in new Design Agreement

Case A: Advising by CMR for Designer are pontificated though Owner. CMR does not advise to Designer directly.

Case B: Based on discussion between Designer and CMR, CMR notifies result of discussion to Owner. Realizing amendment should be agreed by Owner.

Case B is more practical and effective advice. In this research, Case A and Case B are placed as selectable options.

(2) Joint Control of Designer and CMR in construction stage

Generally, Design works in Japan by Designer are usually limited in design stage. Designer usually does not take part in construction stage.

However, to keep quality, information of design stage should be notified to Owner and CMR. Contrary, Designer should have information about construction stage; and confirm whether

construction stage is same as expected procedure.

Such joint control based on information exchange makes develop quality and Designer’s ability. Present system in Japan does not have such process. This study has tried to make such process in Design Agreement. Figure 3 shows difference of Design Works between present system and proposed system.

CMR makes Designer to take part in construction stage. So, duties of CMR are stated in new Design Agreement. Fee for Designer in construction stage is considered to be cost plus fee.

7. Conclusion

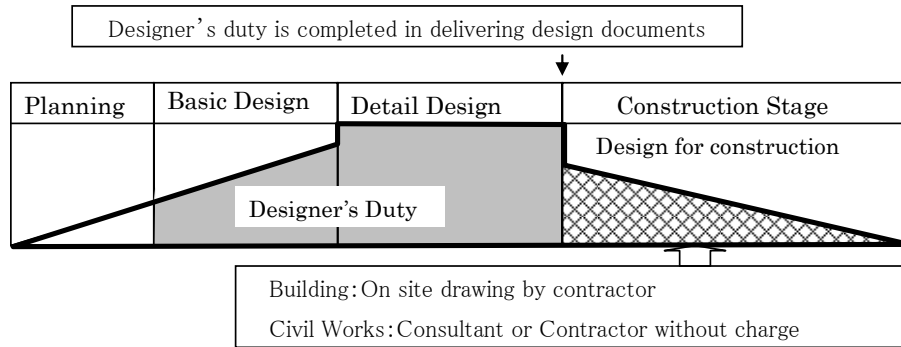
Project execution system based on Contracts established in this study makes “Process control”. Change form “Result control” to “Process control” realizes developing transparency. Construction Industry in Japan will get confidence of citizens based on “Process control”

<Reference>

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<General Duty of Designer in Japan>



<Designer’s Duty of Established Contract in this research>

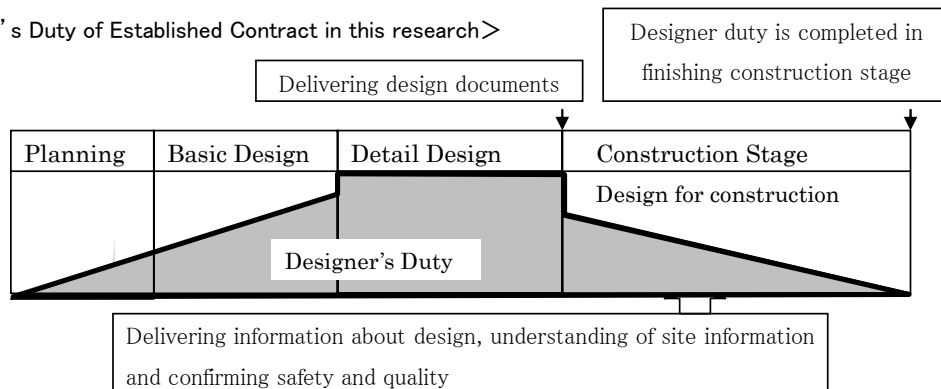


Figure 3: Difference of Design Works between present system and proposed system