

# INTERNATIONAL COMPARATIVE STUDY ON “KOUJI-KANRI (CONSTRUCTION SUPERVISION)” AS CONSTRUCTION CONFORMATION

Takashi Saito <sup>1</sup>, Shuzo Furusaka <sup>2</sup> and Takashi Kaneta <sup>2</sup>

<sup>1</sup> General Manager, Facilities Department, Japan Post, Tokyo, Japan

<sup>2</sup> Associate Professor, Department of Architecture and Architectural Engineering, Kyoto University, Kyoto, Japan

Correspond to [t-saito@wmail.plala.or.jp](mailto:t-saito@wmail.plala.or.jp)

**ABSTRACT :** The Japanese construction industry has faced on lack of quality that is one of the strong confidence fields. It is said that the main reason of this trend is in the case of construction supervisor's defects. But real problems are both the degree of drawing's completion and design activities in construction phase by architect. The purpose of this paper examines that the role of construction supervisor in Japan is changing to the management field and construction conformation, based on the analysis of the WBS based on international comparison among Korea, China, the UK, the US, and Japan.

*Key words :* Kouji-Kanri, Procurement, Client, Construction Management, Project

## 1. INTRODUCTION

In addition to Design Build or Design-bid-Build, supply system of Japan is being diversified by introduction new procurement such as Construction Management etc.

Construction supervision business is also diversified with diversification of clients and projects.

Various construction supervision -- many specialists, such as a construction supervisor as a designer or a builder but third persons, a construction manager, or a project manage, are introduced.

Construction supervision business of Japan is legally defined with design documents. The main activity of him is formal conformance check between product and design documents. On the other hand, the management itself is not legally defined.

It is also the fact that various management businesses are carried out on construction projects. Furthermore, management business does not only remain in a construction stage, though natural, but it is rather carried out in a series of project processes from the planning stage of a project to the construction stage. On the other hand, in the US & UK construction project, management systems, such as CM system, were introduced and both quality reservation and client's demand are already realized.

The purpose of this research is to clarify the feature which the present construction supervisor has. Furthermore, international comparison of the U.S., UK, China, South Korea, and Japan is performed about the relation between construction supervision and management. By these international comparisons, the limitation of Japanese construction supervision business is grasped and it is shown clearly as a broader concept that management business needs to be established in order to improve quality of construction

projects.

## 2. INTERNATIONAL COMPARISON OF CONSTRUCTION SUPERVISOR'S ACTIVITIES

In order to examine the construction supervision business of the many foreign countries, performance examination and analysis for the following data have been compared. In Japan, China, and South Korea, since the language applicable to the Japanese “KOUJI-KANRI (construction supervision)” was defined as law as it is, they were made applicable to comparison. However, in the U.S. and UK, there was no description that used "construction supervision" directly on legal matters. Therefore JCT (The Joint Contracts Tribunal Limited), which is a typical contract, article in the UK, and the U.S. AIA article (The American Institute of Architects) is considered as the candidate for comparison. Moreover, although the article, which introduced CM system in US & UK, had various systems, the typical article of construction supervision business is regulated.

### a) Japan

Japanese architectural law, Notification 1206 of former Ministry of Construction “Reward and activities of Construction supervisors and architects”, CM system manual for local governments by Kensetsu-Gyo Shinko-kikin (Construction development fund)

### b) USA

AIA A201/CMa4), B141/CMa, B801/CMa, General conditions of the contract for construction manager adviser edition, The American Institute of Architects (AIA)

**c) UK**

JCT (The Joint Contracts Tribunal Limited) 98 2000 edition5), JCT Standard Form of Client and Construction Manager Agreement 2002 Edition, Clerk of Works Manual (3rd Edition) 19946), RIBA (Royal Institute of British Architects) Conditions of Engagement, Standard Form of Agreement 1966 & SFA/99

**d) China**

Construction supervisor’s law (GF2002-2002)

**e) Korea**

Korean Architectural law, Korean Construction law, Construction enforcement regulations, Construction industry law

**2.1 International Comparative study of construction supervision**

Table 1 shows comparative study among five countries, Japan, USA, UK, China, Korea by activities during construction phase defined by the Japanese construction law.

In Japan, all activities are defined as construction supervisor’s activities.

There are some characteristics among other countries as follows:

- a) All countries defined architect’s role for passing along design intent.
- b) The activity of conformation of construction and design defined Clerk of work’s role in the UK. Under AIA contracts in the US, architect has similar role to Construction Manager as conformation activity.
- c) Inspection & Advise of Execution scheme are mainly supervisor’s activity, but conformation of design and shop drawings are different country by country. China and Korea defined construction supervisor’s activity; on the other hand, UK and US defined architect’s activity.

Moreover, Table 2 shows the persons concerned who carry out construction supervision business set to each article. It turns out that a different enforcement person assigns and construction supervision business is carried out the business based on the notification No. 1206 defined by Japan.

**Table 1.** International comparative study of construction supervisor’s activities

	construction manager (A201-4.6.10)	Works (JCT Clause 12)	(5.2.1)	(19, 19-2)
<b>Construction supervision completion procedure</b>				
Supervisor	---	Construction manager (JCT CM 13)	Supervisor (3.2.2)	Supervisor (21)
<b>Cooperation of construction contract</b>				
Supervisor	Construction manager (A201-4.2.1)	Construction manager (JCT CM 6.2)	Supervisor (3.2.2)	Construction manager (CM guideline)
<b>Investigation and Acceptance of payment</b>				
Supervisor	Architect (A201 - 4.6.1, 4.6.8)	Construction manager (JCT CM 8.4.1)	Supervisor (3.2.2-7)	Construction manager (CM guideline)
<b>Inspection &amp; Advise of Execution scheme</b>				
Supervisor	Construction manager (A201-3.12.5)	Clerk of Works (JCT Clause 12)	Supervisor (3.2.2-6)	Supervisor (19, 19-2)
<b>Adjustment separate work</b>				
Supervisor	Construction manager (A201-4.6.3)	Construction manager (JCT CM 9.2)	Supervisor (5.3.3)	---
<b>Design work in construction phase (Color and material selection, etc.)</b>				
Supervisor (Architect)	Architect (A201-4.6.18)	Construction manager (JCT CM 9.10)	---	---
<b>Change order</b>				
Supervisor (Architect)	Architect (A201-4.6.13)	Construction manager (JCT CM 8.3)	Supervisor (6.2)	Supervisor (19, 19-2)

**Table 2.** Who does construction supervisor’s activities defined by the Japanese construction law?

Japan	USA	UK	China	Korea
Supervisor (Architect)	Architect, Construction manager	Architect PMr Quantity Surveyor Clerk of Works	Architect Supervisor	Architect Supervisor Construction manager

**2.2 Diversification of scope of works of construction supervisor**

Although the construction supervision business in Japan, China, and South Korea is expressed as construction supervision as a word, the operating ranges differ greatly. It can be said that the Japanese construction supervision is based on builder’s high management ability, which it is not necessary for the Japanese construction supervision to check all builders’ performance, but only check some important

Japan	USA	UK	China	Korea
<b>Pass along Design Intent</b>				
Supervisor (Architect)	Architect (A201-4.6.18)	Architect (JCT Clause 5.4.2)	Architect (Quality assurance 23)	Architect (Architectural law 19)
<b>Conformation of design and shop drawings</b>				
Supervisor (Architect)	Architect (A201-4.6.11)	Construction manager (JCT CM 8.5)	Supervisor (5.2.1)	Supervisor (19, 19-2)
<b>Conformation of construction and design</b>				
Supervisor	Architect/(C)	Clerk of	Supervisor	Supervisor

tasks such as concrete works on construction process. On the other hand, Chinese and Korean construction supervision is requested to educate and manage builder's quality level. The big feature is in South Korea to secure quality by a construction supervisor's authority and operation that a construction supervisor has legal inspection authority. CM system in the US, UK and Korea is defined by the importance of quality control from the beginning of construction project, and practical use is aimed in. In China, inspection is regarded as construction supervision synonymous and it has not resulted even in management business. On the other hand, in Japan, confusion of management business and conformance check business has arisen as the actual condition, and the designer and the construction supervisor are taking charge with a pile, respectively. The role of project participants is not clearly defined.

Figure 3 shows international comparative study of construction supervisor's activities. The Japanese definition of construction supervision business is shown in figure 1&2, which combined legal definition with architectural organization's definition that is much broader than legal definition.

Japanese definition shows the case of public procurement. There are contracting officer added construction supervisor is not architect which means architect does not become construction supervisor. In China, the definition of construction supervisor is broader than the other countries. In Korea, US & UK, the role of construction supervisor is limited.

### 2.3 The role of construction supervision

In previous report, it pointed out that some construction supervision's business, such as to transfer the design information, to decide color, to check shop drawings, and so on, should be transferred to architect's business as one of design activities in construction phase. The conventional construction supervision business among separated orders and new cost effective procurement in public projects. The broader definition of conventional construction supervision by architectural organization which includes Japanese legal definition has been spread segmentation activities by supervisor, contracting officer, architect, construction manager, etc. as shown Figure 3.

Although it is the fact that separating design and construction supervision has an argument from the viewpoint of the consistency of a design, on the other hand, in the statement of principles of construction work supervision outsourcing of the Ministry of Land,

Infrastructure and Transport (MLIT)"... while building contract with more high transparency and objectivity, in order to contribute further by suitable quality reservation of building-and-repairs construction about outsourcing of construction work supervision business, which defined by "Construction work supervision outsourcing contract" and "Construction work supervision outsourcing common-specifications document". It considered as..." and to carry out third person supervision was made into the principle. Moreover, although there are many cases that "designer serves as a construction supervisor in MLIT report also in the field of residential projects, it may be possible to request only construction supervision to third person. Decentralization tendency of construction supervision business has been spread, because various construction supervisions have been introduced to not only central government, but also local government.

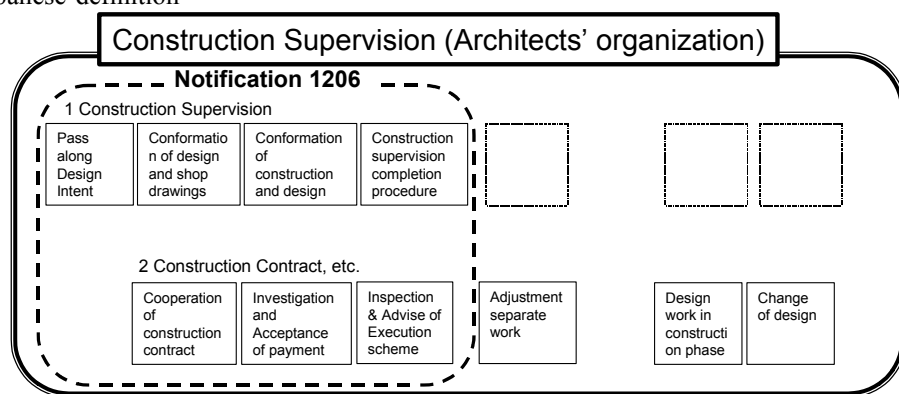


Figure 1. Original Definition of the Japanese construction supervisor

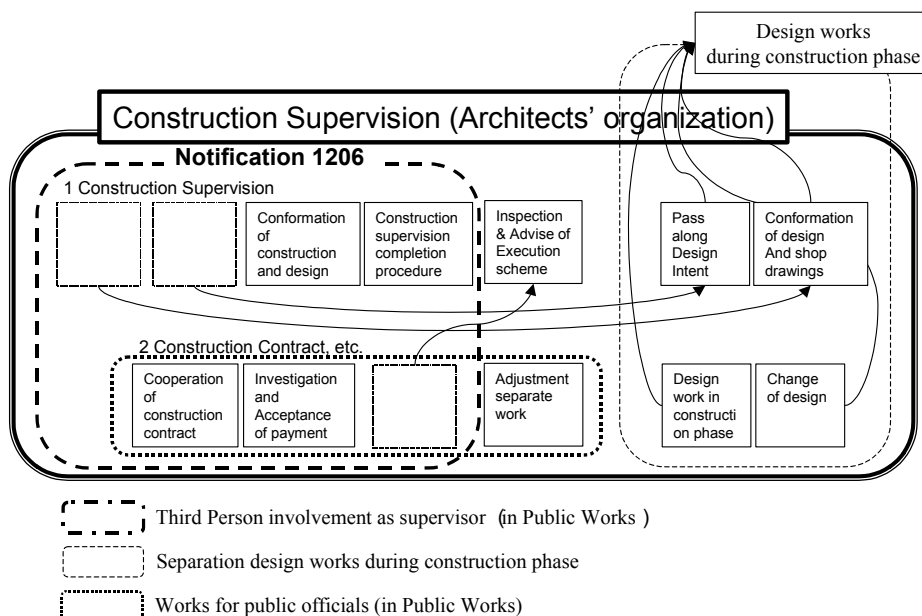


Figure 2. Changing Definition of the Japanese construction supervisor

As the result of functional decentralization of construction supervision business, that independent construction supervision enters personally with the designer, and construction supervisor's ability has been changed from bundling up all participants' activities to be specialized, it is requested much more diversified from the client. Therefore, the generalization management business among project participants' activities has been occurred as the function to adjust two or more persons concerned. The people who superintend these kinds of business, so called

“manager”, are necessary much more. The quality control manager such as construction manager, who manages products to adjust client's needs, has been widened to the function of construction manager, who check and monitor construction process as client's representative.

These movements affect to set up management activities instead of conformation activities of construction supervisor.

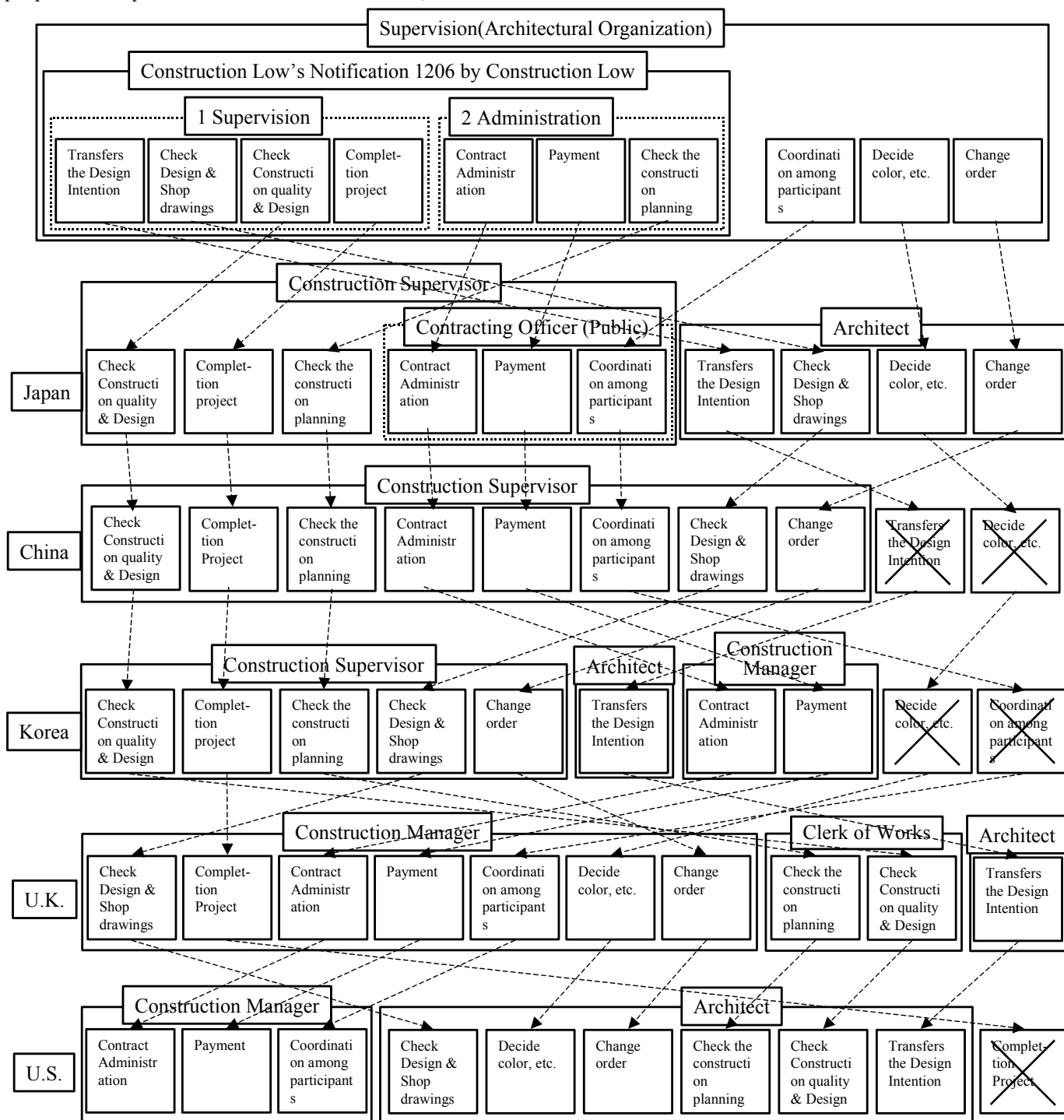


Figure 3. Function distribution system of construction supervisor's activities

## 2.4 Main body of construction supervisor's activities

The real chief mourner object of the construction supervision business in each country also changes with countries so that construction supervision business of Japan may attain diversification. Especially, in the U.S. and Britain, the subject, which carries out Japanese construction supervision business from the participant in a project being various, is also diversified.

### a) USA

In the U.S., inspection by the builder and inspection by the government organization are distinguished, and it thinks by contrast with Japan, Architect (designer) carries out based on the contract. The quality inspection by the administration in the U.S. is defined as inspector system of state level, and the check of the quality in the spot is defined as business of construction manager or designer. In Clause 2.6 of the AIA article B141, it is specified that designer determines whether work is possible as the design documents as evaluation of the work in Contract Administration Services. In the AIA articles, B141/CMa, B801/CMa, when CM is introduced, quality control in B141/CMa2.6.6 shows that "designer" manages whether the builder is carrying out to accept design documents and contracts, and the responsibility for designer and construction manager is similarly defined.

### b) UK

In RIBA (Royal Institute of British Architects) Conditions of Engagement (1966 version), the difference between a designer and Clerk of Works is shown as follows;

「Supervision」 : Resident Architect
「Inspection」 : Clerk of Works

Moreover, according to the newest Clause 2.4&3.10 of SFA/99 (Standard Form of Agreement for the Appointment of an Architect), site inspectors is defined as consultant's role. "Clerk of Works" resides in the spot permanently, and is bearing the business that inspects whether necessary quality is securable as client's representatives. It mainly has five business, Anticipation, Interpretation, Recording, Inspection, and Reporting. JCT, which are the main standard contract in the UK, defined the role of clerk of works as solely inspector for the client. However, the relationship between client and clerk of works is based on contract, the role of clerk of works is not defined by law. In this meaning, it can be said that Clerk of Works is carrying out broad quality control business with the designer.

### c) China

In China, qualified construction supervisor who belongs "supervision unit" does all construction supervise activities in both public and private construction projects. Qualified

construction supervisor has three kinds ranking, 1<sup>st</sup> class, 2<sup>nd</sup> class and 3<sup>rd</sup> class by Chinese construction law. On the other hand, construction works are classified by 14 kinds with three ranking according to the contents of construction works and construction output volume. A "supervision unit" is selected in the combination of construction grade and construction supervision's grade. If it does not belong "supervision unit" construction supervision business cannot be carried out. The registered architect who belongs to a registered architect office cannot carry out construction supervision business.

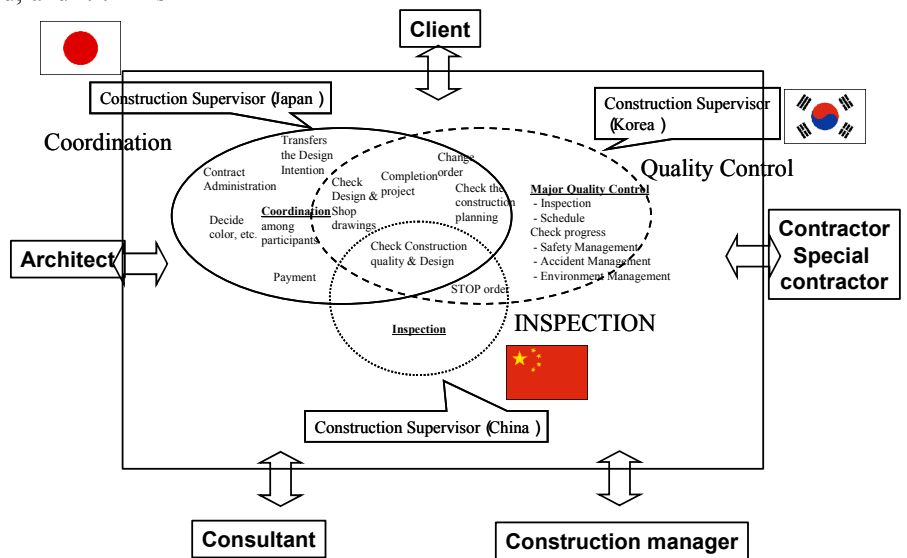


Figure 4. The role of Construction supervisor among Asian countries

### d) Korea

Existence of the construction supervisor, which those who perform construction supervision business according to the construction value and belongs to private construction sector's supervision special company, is characteristic in South Korea. Although it is common that the registered architect who belongs to the registered architect office like Japan carries out "construction supervision" in private sector projects. In "construction supervision" of multiplex use buildings, the supervision member which belongs to a construction supervision special company or a comprehensive supervision special company must carry out (Building Method Law Article 19 of the enforcement ordinance). Although public officials who belong to the organization perform construction supervision business as a superintendent in public works, in addition to the superintendent belonging to client organization, if the total cost of construction projects are over 10 billion won or more, the supervision member which belongs to the supervision special company of the field construction performs "responsibility supervision" business (construction technical law article 27) must be hired. Responsible supervision system is inspected by third party in public construction projects. A supervision special company can also perform "construction supervision" business of private sector construction projects.

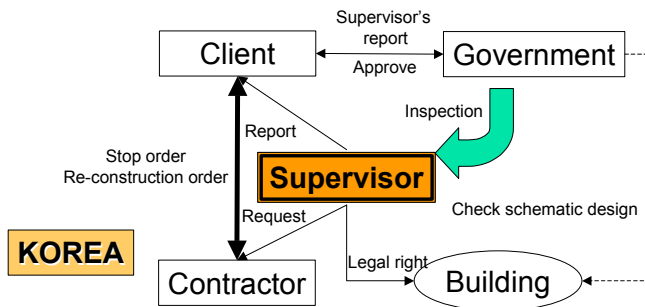


Figure 5. Construction supervisor in Korea

e) Japan

In Japan, the design office which took charge of the construction takes charge also construction supervision business in many cases. However, adopting third person supervision positively in the latest public building construction etc. also has many examples which choose a construction supervisor who is not designer.

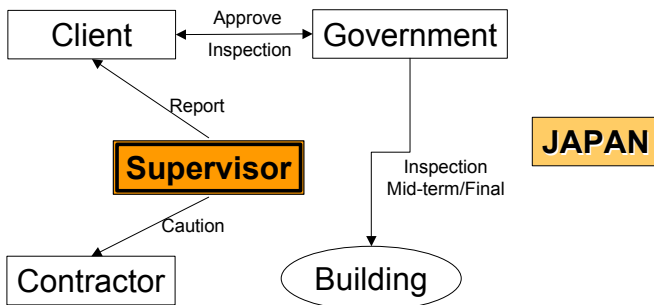


Figure 6. Construction supervisor in Japan

2.5 Definition of construction supervise activities among countries

As mentioned before, the present condition is that the definition of the construction supervision business itself is changing a lot, simultaneously that the real chief mourner object of construction supervision business is diversified. Therefore, first of all, when performing comparison with construction supervision business of Japan, after redefining construction supervision business of Japan, it is necessary to carry out comparison with each country. Fundamentally, the definition in Japan and China is accepted as similar Chinese character, although there are some ambiguities in definition. On the other hand, although South Korean construction supervision is defined by the building method or the registered architect method, otherwise the name of "supervision" is defined by the construction technical method of administration and the housing construction method, and each business also differs. Construction supervision business and a construction supervisor cannot define by the US and UK uniquely. Therefore the definition of construction supervision business has been changed by client's requirements in the US and UK. They shared the Japanese definition of construction supervision business with many participants such as construction manager, inspector, architect, Clerk of Works. Construction projects in the US & UK are much more fragmented rather than the Asian countries. The function of Asian construction

supervision is mainly to keep quality by conformace check between product and design documents, but in the US & UK, management function is much more important.

Table 3. Definition of Construction supervisor

	Responsible organization	Law etc.	Business content
Japan	Construction supervisor	Architectural Law 2(6) (Notification 1206)	In the person's responsibility, construction is compared with a plan document, it buys and carrying out as it is a plan document checks whether there is.
US I	Construction Administrator	AIA A201 Clause 2.6	management of check payment examination contract change with order books Etc.
US II	Inspector	AIA A201 Inspection	According to the demand of order books, it inspects during construction or after the completion of construction.
US III	Construction manager Architect (Inspector)	AIA A201/CMA Clause 2.6	The determination of whether work has agreed in the demand of order books, and a report to client
UK I	Architect Clerk of Works	JCT98 Clause8.4 Clause12	A designer judges whether contract books are followed and determines payment etc.
UK II	Clerk of Works	JCT98 Clause12	Business which inspects whether it resides in the spot permanently and necessary quality can be secured as client's substitute
China	Construction supervisor	Construction Law 1 (3)	It is client's being requested, and supervising and managing construction by the legal system, the regulation, and the contract.
Korea I	Construction supervisor (Incl. responsible construction supervisor)	Architectural Law 2(4)	The act which checks whether a building and construction equipment, or a structure is constructed by the place provided by the building method to the bottom of accountability as

			the contents of the plan document, and is guided and superintended to a quality control, care of works, a safety control, etc.
Korea II	Construction manager	Construction Law 2	All or a part of supervision business about the plan about construction work, validity investigation and analysis, a design, supply, a contract, construction management and supervision, evaluation, ex post facto management, etc. is carried out.

### 3. CONCLUSION

Conventional Japanese construction supervision is defined not only conformance check between product as quality control function and design documents, but also management in construction process whose definition is broadly excess the legal function of the construction supervisor set by the Japanese architectural law article 2. When the diversity of a project is taken into consideration from now on, the subject which carries out construction supervision is also various. He may sometimes leave [also adopting third person supervision positively, that a designer also carries out as a construction supervisor as it is] a part of construction supervision business (except for legal business) to construction manager according to the characteristic of a project. Essentially required things are the basis of an understanding of client, and clarifying from the initial stage of project according to client or the characteristic of project about who the range of construction supervision business is not redefined, but carries out the business about the construction supervision business defined broadly from the viewpoint of quality control. Moreover, although only the conformance check business is prescribed about the construction supervision business defined as the present notification No. 1206, it is required to clarify the people who the conformance check with client demand and management business used as the basis of a construction project. For that purpose, classifying into "conformance check business" and "management business" clearly, and deciding the operating and responsibility person is very important to develop construction industry. From now on, conventional construction supervision business which defined more broadly should be transformed to new construction supervision business which redefine as quality control business during construction phase by conformance check between product and design documents, moreover, the definition of new construction supervision business should be able to make a choice of supervision activities according to the characteristics of construction projects and characteristics of client demands.

### REFERENCES

- [1] AIA (1997) AIA 201/ CMA, General conditions of the contract for construction manager adviser edition, The American Institute of Architects, US
- [2] Bennett, J. (1991) International Construction Project Management, Butterworth-Heinemann Ltd., Oxford, UK
- [3] Chappell D, (2000) Understanding JCT, Standard Building Contracts, Sixth Edition, E&FN SPON, London, UK
- [4] Construction Manager Research Committee (2002) Kensetsu-gyo Shinkou Kikin, Tokyo, Japan, <http://www.yoi-kensetsu.com/cm/index.html>)
- [5] Cox A., Thompson I. (1998) The Contracting for Business Success, Thomas Telford, London, UK
- [6] ICW (1994) Clerk of Works Manual, RIBA, UK
- [7] JCT (2000) JCT 98 2000 edition, The Joint Contracts Tribunal Limited, UK
- [8] Murdoch J., Hughes W. (1992) Construction Contracts, Law and Management, E&FN SPON, London, UK
- [9] SAITO, T., FURUSAKA, S., MINEMASA, K. (2003) pp145-152, Construction Supervision of Public Projects, Research Paper of Japanese Architectural Institute No. 574, Tokyo, Japan
- [10] SAITO T. (1994) A Comparative Study of Procurement Systems in the UK and Japan, CIB W92 Proceedings Publication 175, pp389-398, Hong Kong
- [11] SAITO, T., Furusaka, S., Kaneta, T. (2005) A step forward to improve the Japanese Construction Supervisor by introducing Toyota Production System, CIB W55&65 Symposium, Helsinki
- [12] Takahiro FUJIMOTO (2001) Business Architecture, pp3-26, Yubikaku, Tokyo, Japan