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## **The Japanese Way of Tendering and Contracting**

Pratiques japonaises dans la soumission et l'adjudication

Japanische Formen der Ausschreibung und Vergabung

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### **SUMMARY**

In Japan, a number of large scale structures including skyscrapers are still being constructed, despite the fact that Japan apart from having extremely congested cities lies in an earthquake zone. Systems of safety and quality assurance for building structures are an integral aspect of Japanese building practises. One aspect of the quality assurance system is the Tendering and Contract System in Public Works Construction.

### **RÉSUMÉ**

Un grand nombre de constructions importantes, dont des gratte-ciels, continue à être réalisé au Japon, ce pays est caractérisé par des zones urbaines très larges et par une activité sismique intense. Les systèmes de sécurité et d'assurance de la qualité des constructions de génie civil font partie intégrante des pratiques japonaises de la construction. Un élément de cet ensemble est le «Système de soumission et d'adjudication pour les constructions d'intérêt général».

### **ZUSAMMENFASSUNG**

In den eng überbauten und durch Erdbeben gefährdeten Städten Japans wurden und werden bedeutende Bauwerke, unter ihnen auch Hochhäuser, gebaut. Die Anwendung von Systemen für die Gewährleistung von Sicherheit und Qualität sind ein integraler Teil japanischer Baupraxis. Dazu gehört auch das System von Ausschreibung und Vergabung, welches bei der Erstellung öffentlicher Bauwerke Anwendung findet.



## 1. FEATURES OF CONSTRUCTION INDUSTRY IN JAPAN

### 1.1 Preface

In September, 1985, an earthquake of the magnitude 8.1 occurred along the Pacific coast of Mexico, in the capital, Mexico City, located almost 400 Km from the seismic center, over 5,000 people were killed, and a considerable number of buildings destroyed.

Japan, like Mexico, is located in an earthquake zone, and as a result, subject to frequent earthquakes of various magnitudes. This poses special problems in the field of construction and has led to the development of a sophisticated aseismic technology, which combined with Japan's unique "social system", makes it possible to construct skyscrapers, nuclear power plants, suspension bridges, inground LNG tanks and other such projects.

The intention of this article is to explain a portion of that unique system associated with "safety and quality assurance" of large structures, specifically the bidding and contract system utilized in public works in Japan.

### 1.2 Aseismic Technology

Aseismic engineering knowledge helped to develop the first skyscraper in Japan, the Kasumigaseki Building was completed in 1968, since then numerous skyscrapers have been constructed. The history of aseismic engineering began 95 years ago, with the Nohbi Earthquake. The earthquake caused extensive damage to those structures and bridges which had been constructed utilizing newly introduced European technology. The result was more attention being forced on the seismic forces affecting construction. The Great Earthquake of 1923 in the Kanto district, and the resultant widespread destruction, led to the incorporation of various standards and specifications in construction, where safety for human life and building structure became major considerations. At that time, Japan became the first country to incorporate into statutory form, aseismic regulations in the field of construction; other countries, such as the U.S.A. would soon follow suit.

In the years after the war, the construction industry, saw more development in the field of aseismic technology. In 1981, the revision of the Enforcement Ordinance of the Building Standards Act introduced a new aseismic design method.

### 1.3 Industrial Characteristics of the Construction Industry

As it is well known, the construction industry has industrial characteristics which differ from those of other industries. The first characteristic is that of an order receiving contracting business. Business is maintained only through orders for construction. The second characteristic is that of a single production at a different location. The scale and type of construction, as well as the site and location varies at all times. Unlike a general commodity a structure is not interchangeable with another. The third characteristic is that construction is an outdoor and weather oriented industry therefore profitability is greatly affected by natural conditions and local environments. The fourth is it is a labour intensive comprehensive industry which relies largely on subcontractors, suppliers and manufacturers. As well the construction industry must organize subcontractors, supplies and manufacturers to ensure accurate and efficient delivery of products for construction.

### 1.4 Cultural and Construction Differences

Historical Japanese architecture and engineering works, manifest in Shinto Shrines, Buddhist temples, embankments and roads, demonstrate some basic cultural and construction principles in Japan. Japanese culture places nature in an esteemed position a place of prominence, Japanese culture is sympathetic

to nature. The construction as a result does not fight against nature rather it only protects from nature. In Europe and America it was not possible to try to achieve this balance with nature, the extremes of climate made it necessary to conquer in order to maintain human existence. Consequently, natural science and structures were made to forcibly cope with nature. The difference between the West of keeping harmony and order usually by means of contrast and the Japanese way of depending on mutual fiduciary relations dependant upon mutual good faith can be said to be attributable to the substantial difference in the philosophy and culture.

In spite of such differences, Japan since the Meiji era has followed Western patterns, in preparing similar laws and regulations governing construction. However, a Japanese-manner of application has been kept regardless of the Western origins, thus the following problems have resulted. That is, in the process of hastened modernization during the Meiji ear, such a relation was created that the government as the orderer dominated contractors with power, and the latter was only to obey the former. A trace of such a relation is still reflected on the operation of the bidding and contracting system at present, and an owner and a contractor are not always in an equal position.

## 2. PREQUALIFYING PROCEDURE

### 2.1 Licensing System for Contractors

To do the business of contracting for construction, one has to obtain a license under the Construction Business Act. The following requirements must be met by a construction company in order to obtain license.

- (1) Business managers on staff
- (2) Full time staff engineers
- (3) Sincerity in fulfilling a contract has been recognized.
- (4) A base of assets or monetary credit exists, sufficient to support the execution of contracts.

It is the first condition for a contractor to meet the above requirements. If a contractor violates other laws related with its business or acts unfaithfully with regard to a contract, he will be punished under a provision of the Construction Business Act.

### 2.2 Application for Nomination and Prequalifying Procedure

A contractor has to send in an application for nomination for works, in advance, to a government agency where he wishes to tender. This application is made on the basis of the applicants' business status on the beginning of a year. The government agency giving orders classify contractors into three to five grades by examining their means, credit, results of works, performance of safety, and other points. After this classification, work assignment is determined, and the contractors engage in promotional activities while waiting for a nomination from the government agency.

## 3. BIDDING SYSTEM

### 3.1 Nomination of Contractor Qualified for Participation in Bidding

Competitive bidding is fundamentally applied to bidding for government works. The principle of competitive bidding is regulated by the Local Government Act. There is general competitive bidding and competitive bidding by specified bidders. The majority of the bids are of the latter kind. When competitive bidding by specified bidders is required for a work, the nomination committee from the Government will determine the bidders according to the nomination standards and also considering the past record of nomination and awarding contracts. If a tenderer on examination is found to have an unstable credit in business,



past defective work or injury causing accidents, he may have difficulty receiving a nomination from the nomination committee. A strict examination is made for a bribery case, death from accident during work and the like, and those who have committed such failures will be unable to receive a nomination for a certain period.

### 3.2 Notification of Construction Work

Upon notice of nomination from the owner, a planned work is made public, and documents such as design drawings, construction specifications and condition of estimate are presented to the nominated constructors.

Calling the nominees to the site office, detailed explanation is made of the work with the specifications and drawings issued by the owner, as well as an on-site briefing and inspection is made.

Following the site briefing, the nominees make a close study of the specifications (common, special, additional) and drawings. During preparation of the estimate if points are found to be unclear, a questionnaire of these points is assembled and submitted to the orderer. The owner prepares answer sheets for the nominees.

Then, each of the nominees make a further survey of the site, calculate the quantities, the execution plan, setting of unit prices, and prepares in detail, statements of direct construction cost, temporary work expenses, machinery and equipment cost and indirect expenses. The final estimate is determined when general and administrative expenses, interest and profit are added to the preceding costs.

### 3.3 Tendering and Awarding Contract

Since a government agency is restricted by its budget, it sets a "predetermined maximum price" for bidding. This, a common characteristic in Japan, is the price of the work where a standard contractor does the work by reasonable methods, and the price by the successful tenderer should not exceed it.

Immediately after receiving the tenders the opening is made by an officer-in-charge in front of the tenderers. The intent of awarding the contract is indicated to the lowest tenderer within the limit of the predetermined maximum price, and a contract is made with the tenderer. If the price is exceeded, bidding is performed once again. If the limit is still exceeded after bidding is repeated a few times, negotiations are made between the lowest tenderer and the owner. This step may lead to the award of the contract, but there are cases where the procedure of a free contract results in an agreement.

## 4. CONTRACT SYSTEM

### 4.1 Contract and Quality Assurance

When selection is made of a successful tender or a negotiation, a construction contract is concluded. The contract documents include the contract, conditions, design drawings and specifications (which include the site briefing sheets and the question & answer sheets) the last two being called design documents. The contract is effective and binding when it is signed by both parties. The Construction Business Act provides that the owner and contractor should reach agreement on a fair contract on an equal footing and perform it with faithfulness and sincerity. The contract mentioned above sets forth the title of work, the term of work, the contract price and other main items, while the conditions show the clauses regarding the rights and obligations of the parties that can be standardized. The design documents express technical matters and those concerning quality in the concrete for the execution of the work. These contract documents are the only arrangements binding the parties with legal effects.

Actually, for public works, Standard Contract Conditions for Public Works are employed as a rule for conditions of a contract for work. These conditions, comprising 47 articles, lay down the contents of work, its term, contract price, advance payment, partial payment, completion, delivery of work, altering conditions, damage due to force majeure, change of the contract price owing to fluctuation of wages and prices, guarantee of the contract, a warranty, and others.

As well, there is the Standard Subcontract Conditions for Construction Work (A, B) which is the conditions for subcontract works. From the standpoint of structure, safety, and quality assurance, there seems to be few problems between the contracting parties. As previously stated one of the characteristics of the construction industry, is that an owner cannot freely select a product such as ordinary commodities. Requirements on quality are specified in the design documents, as well part of the quality achieving process should be indicated by the owner.

Furthermore, technical restrictions are imposed by laws and regulations. The level of quality to be achieved on a structure is often demonstrated in the form of requirements from the owner to the contractor. The requirements include a clause to check completed work by inspection, but it is extremely difficult to secure quality only through inspection. At the time of concluding the contract, therefore, the method of execution of works and the control method are provided as requirements.

#### 4.2 Kinds of Contracts

The blanket contract is an ordinary contract to undertake the total work to complete the construction. The separation contract applies to those cases where building construction, is divided into construction segments such as air conditioning equipment, electric work and others, and separate orders and contracts are made for each item.

The lump sum contract is a method to fix the total amount of construction price, which is used almost always in Japan. The cost-plus-fee contract method is used where there are many uncertain elements in the work and the structure must be properly completed.

#### 4.3 Start of Construction

As soon as the contract is signed, the owner and the contractor take the necessary steps to execute the contract. The owner sends the contract to a guarantor to insure completion, and notifies the contractor of the supervising engineer. The contractor submits to the owner notices of commencement, the site representative, senior engineer, supervisory engineer and technical experts, and work progress schedule and application for approval of subcontractors, for the owner's approval.

Before the start of construction, the contractor understands the contents of the construction through the design documents, submit a concrete execution plan for details of tentative constructions, procedures and working methods to get them examination by the supervisors.

### 5. PROBLEMS AND PROSPECT

#### 5.1 Equal Footings in Contract and Its Rationalization

Japanese, regard the concept of contracts in an historically different manner than the West. Though they have prepared similar laws and systems as the Europeans and Americans they have applied such laws and systems in a Japanese manner. In spite of such application, they have functioned relatively well and led to the completion of large-scale projects.





As to the long term relationship developed under the owner's leadership, where the contractor is controlled by the owner's intention and obeys the owner, a question should be asked as to whether it is desirable or not for us to continue to take advantage a Japanese characteristic which does not discern a qualitative distinction of the contractual right and other obligations. In order to break the isolation of the domestic construction industry and to comply with diversification, progress in other technologies and the internationalization of the world, a unilateral contract should be established to achieve equal positions in contract. The concept should be reformed for those people concerned towards a clarification of the contents of a contract which would be suitable for an improved contract system.

### 5.2 Business Efforts and Predetermined Maximum Price

In Japan, perfectly free competition is prevented by the fact that a contract cannot be concluded where the bid price is higher than the predetermined maximum price.

Only recently some owners have come to develop a more flexible idea of the system in order to make the best positive use of contractors' technologies such as VE in the U.S.A. and the bidding for alternatives in Europe.

Viewed from the aspect of technical development, a new and superior technology may fail to have a better chance at present in governmental works owing to restrictions of the present contract system.

### 5.3 Specialization and Transmission of Quality Information

In Japan, there was a tradition of superior technology used for the Golden Pavillion of the Horyuji Temple, the world's oldest wooden building, and the large-scale Temple of the Great Image of Buddha in Nara. Today, technologies of European-like architecture introduced from the West have been playing a major role based on the characteristics of science and modernism.

The general trend in high-technology indicates a further specialization of "jobs". In the stages of planning, designing, construction and use which form a continuous flow to create a structure, information on quality and function is apt to be separated.

Since Total Quality Control (TQC) was introduced into the construction industry, comparatively detailed discussions have been made on quality assurance through TQC activities. One of the subjects is the transmission of quality information. In quality assurance, two flows of information are important, one is the information of the desired quality to each of the following stages of work. The other is the feed back of claims from the following stages including the use to the various stages of the process.

An improvement activity carried out solely by a contractor in his position may be just good enough to make a minor improvement of irregularities in work. To make broad service of a constructions in society, it will be indispensable to establish a data base of quality which can commonly be utilized by government agencies, which are owners and administrative organizations, academic institutes, designers, consultants and contractors.

We would like to make a contribution to the creation of a more sophisticated living environment for the 21st century by correcting the inequality in the bidding and contracting and also by mutually understanding the owner's and contractor's roles.