Comparison of U.S. and Japanese Practices in Public Construction

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Abstract: Research conducted on public construction contracting practices in Japan and the United States is discussed. A comparison is made of contracting practices in Japan and the United States by examining how a major Japanese construction company functioned on two representative public contracts in Japan and on two public contracts in the United States. The paper makes recommendation for changes in procedures by American contractors seeking to do business in Japan and for Japanese contractors seeking to perform work in the United States. These changes may be necessary before contractor organizations from both countries can take full advantage of each other's construction market potential.

Introduction

The increasing trade imbalance between the United States and Japan has recently become a major problem between the two countries. To resolve this problem, U.S. trade negotiators are aggressively proposing various programs potentially affecting a number of major industries in Japan, including construction. The construction market in Japan has been kept closed to foreign participants since its emergence. Like the rice industry, the construction industry has been deemed by Japanese officials a sanctuary for domestic contractors only. However, the ever-increasing trade deficit of the United States has forced the Japanese official policy to begin to change. In late March 1988, negotiators from the two countries reached a compromise to open up a portion of Japanese public and semi-public projects to U.S. contractors.

Thus, the Japanese construction market became a new frontier for U.S. general contractors. The conditions in Japanese public construction market are unique due to the practice of governmental control of most construction activities exercised by the Ministry of Construction, and the relatively limited competitive environment resulting from the "designated competitive bidding" system, thus making the situation in Japan not comparable with any other Asian country. However, the main barrier preventing foreign contractors from entering the Japanese construction market is not the Japanese governmental restrictions. Customs of labor management, based on tradition, as well as contractual relationships between public owners and general contractors in Japan must be studied by U.S. contractors prior to attempting to participate in the bidding for Japanese public construction projects.

Although the first step in the opening up of the Japanese public construction market consists of only 17 major projects in Japan, it is inevitable that Japanese general contractors must prepare themselves for international com-

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petition in the entire domestic Japanese public construction market. Since this situation will increase their attempts to compete more strongly in the overseas construction market, the U.S. public construction market will thus increase in importance to Japanese general contractors (ENR 1986a).

Japanese general contractors have been operating in the United States to some extent for about two decades. However, until several years ago, their major clients were Japanese industrial firms moving their production facilities into the United States (ENR 1986c). Their entry into the U.S. public projects market has been difficult because of high competition and difficulties in prequalification for most public projects. In the past ten years, though, Japanese general contractors have been awarded several U.S. public project contracts through partnerships with U.S. general contractors (ENR 1986c).

The U.S. government's attitude toward the trade deficit with Japan drastically changed in 1987. To further pressure the Japanese government to open up the Japanese construction market to foreign firms, several sanctions were imposed (Constructor 1987a, 1987b, 1987c). As one result, a partnership involving a Japanese general contractor was banned from bidding on a U.S. public construction project (ENR 1988a). The sanctions were effective, and soon after the ban took place, the negotiators reached a compromise to make a portion of the Japanese construction market available to international contractors, including U.S. contractors. After the opening of the Japanese public and semi-public construction projects by the Japanese government, the U.S. government permitted Japanese contractors to participate in bidding for U.S. public projects (The Washington Post 1988a).

Surprisingly, fewer U.S. contractors attempted to enter the Japanese construction market than expected by the government officials in both countries (ENR 1986b). Nonregulatory barriers preventing foreign contractors from entering the Japanese public construction market, which are not related to the governmental restrictions, are now becoming conspicuous. The possibility of lesser profit during the first several years of operation is a relatively minor factor that is discouraging the U.S. contractors from entering Japanese construction market. The far more important problems have deep roots in the differences in culture and business customs between the two countries.

Opening of Japanese Construction Market

Resolution of the trade imbalance is a recent issue between the U.S. and Japanese governments. During the negotiations to resolve this problem, a discussion on the opening of the closed Japanese construction market has been taking place. Both governments seem to have reached a compromise by opening up nine public and eight semi-public projects in Japan to U.S. and other foreign construction firms. Tables 1 and 2 show the opened projects (ENR 1988b; ENR 1988c).

Japanese contractors initially thought that the intention of the U.S. construction firms was to participate only in the construction phase of these projects (ENR 1986b). After reaching the compromise, it became clear that these firms were also seeking participation in the general engineering phases of the projects. For reasons presented later in this paper, this created some additional problems for the Japanese government.

The participation of foreign contractors in the Japanese construction market will require that the current contractual practices in the public works be

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TABLE 1. List of Public Projects

Project name (1)	Cost ($ × 10^6) (2)	Nature (3)	Location (4)	Owner (5)
Trans-Tokyo Bay Highway	7,900	Undersea tunnel highway	Tokyo	Ministry of Construction
Akashi Straight Bridge	2,500	Bridge	Near Kobe	Ministry of Construction
Haneda Airport Expansion Phase 3	846	Airport reclamation	Tokyo	Ministry of Transportation
Ise Bay Bridge and Highway	846	Bridge highway	Near Nagoya	Ministry of Construction
Tokyo Port Redevelopment	539	Marine	Tokyo	Ministry of Transportation
New Hiroshima Airport	385	Airport	Hiroshima	Ministry of Transportation
Yokohama Waterfront Redevelopment	208	Marine building	Yokohama	Yokohama City
Kansai Science City	NA	Suburban development	Near Osaka	Joint authority of Osaka, Kyoto, and Nara
NTT Building	NA	Intelligent Building	Provisional	Ministry of Posts and Telecommunications

modified to facilitate the internationalization of the industry. Yet it is still not clear whether such modifications will follow the American contract style or the European contract style. Whatever the modifications may be, it is necessary for the Japanese contractors to undertake the following measures to effectively perform in the new situation: (1) Reorganize the overseas departments to adequately meet the needs of negotiating partnerships with foreign contractors; (2) establish a marketing strategy for new international partnership entities; (3) re-educate the current employees to adjust to the new competitive environment; (4) acquire personnel capable of handling international contracts and engineering management in the Japanese market; (5) employ foreign engineers and administrative staff both in domestic offices and overseas branches; and (6) increase the acceptance of foreign trainees sponsored by Japanese contractors (Monthly Ohbayashi 1988).

TABLE 2. List of Quasi-Public Projects

Project (1)	Nature (2)	Location (3)	Owner (4)
Kansi International Airport Terminal construction	Building	Osaka	Kansai International Airport Company
Haneda Airport Terminal construction	Building	Tokyo	Tokyo Airport Company
New Hiroshima Airport Terminal construction	Building	Hiroshima	Third sector
New Kitakyushu Airport Terminal construction	Building	Kitakyushu	Third sector
Yokohama International Conference Center	Building	Yokohama	Third sector
Tokyo Teleport	Intelligent Building	Tokyo	Third sector

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RESEARCH METHOD

The results presented in this paper were obtained through interviews with construction professionals residing on-site at Ohbayashi Corporation public construction projects in the United States, such as consulting resident engineers, contractor's project managers, and project engineers for the U.S. public projects. Japanese public construction data were obtained through the first writer's involvement in two Japanese public construction projects as a project engineer from 1983–1986 (Kakoto 1988).

JAPANESE PUBLIC CONTRACTS SYSTEM

Historical Background

The origin of Japanese public works contracting can be seen in the Yedo era, when the Tokugawa's feudal power prevailed in Japan between the 17th and 19th centuries. A governmental project management system emerged at that time, mainly in works such as levee construction and irrigation (Kohno 1975). The Yedo era was a politically stable period following a long civil war. The political philosophy of the time was based on absolute feudalism, which still influences modern Japanese public contracting practices today.

Many of the major general contractors in Japan had their origin in the subsequent Meiji era. The development of the construction industry was mainly led by the national government and the *zaibatsu,* giant family trusts that prevailed in the Japanese political and economic world. The construction industry was technically and legally protected by the government through its paternalistic conduct. The zaibatsu financially aided the industry to quickly establish a modern industrial infrastructure in Japan. The international situation was threatening the independence of Japan at that time. Therefore, it was both a political and economic priority to protect and nurse the domestic construction industry (Paulson 1979). Contractors were considered the labor force collector at that time, and the construction management practices were at a primitive stage, especially in heavy construction. Thus construction contracts of both public and private owners were extremely one-sided; the client had absolute power over the payee.

After World War II, democracy prevailed in the political system of Japan. General business transactions became fair, except for the construction industry, which was constrained by the national demand to reconstruct the infrastructure ruined by the war. To an even greater extent than in the United States, the construction industry was the bellwether of the Japanese economy. In 1946, it constituted approximately 7% of the gross national product. At present, it still has a substantial percentage, about 5% (National Economy Report of Japan 1986).

Rapid technological advancement of the construction industry began in 1949. The Construction Industry Law was established in May of that year. Under that law, the contractual status of contractors was largely improved. The legal position of contractors was established, and technological innovations began to take place. A leader in that progress was the Ministry of Construction, a gigantic governmental agency in charge of contract law, licensing, and the growth of the construction industry. Under these conditions, the language used in Japan's Standard Public Works Contract Document and

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the actual practice of the public contracts still one-sidedly gave the owners the advantage (Kohno 1975).

Legal Background

The legal structure of the Japanese construction industry has its origin in the Meiji era, when the feudal government collapsed and the emperor returned to absolute power in the mid-1860s. During that period, Japan experienced rapid modernization. A law system under the influence of the European continental system was established. The current Japanese constitution is still influenced by the European continental system, although it has been modified since World War II (Kohno 1975; Paulson 1979).

In contrast, the U.S. public works contracting practice has its background in English common law. Based on this law, both the owner and the contractor are required to perform fairly when bound by a contract (Clough 1986; Takahashi 1975).

Public Works Agencies

The following major public works owners exist in Japan: (1) The Ministry of Construction; (2) the Ministry of Transportation; (3) the Ministry of Agriculture, Forestry, and Fishery; (4) the Japan Highway Public Corporation; (5) the Japan Water Resources Development Public Corporation; (6) approximately 50 prefectural governments; and (7) numerous municipalities.

The structure of the Japanese government is extremely hierarchical compared to the federal system in the United States. Administrative power is centralized within the national government. The country is divided into approximately 50 district governments, which are called prefectures. The prefectural governments are a middle-level administration between the national government and the municipalities. Actual budgeting of public works is mostly handled by ministries of the national government or, if a lower level of public agency is to perform the budgeting, such activity is strictly supervised by the upper level agency.

The largest public works owner is the Ministry of Construction. Among the charges of this agency are control of rivers and lakes, nationally owned roads and highways, housing planning and supervision of private housing developments, building code enactment, storm water prevention, etc. The Ministry of Transportation is in charge of control of harbors and most aspects of public transportation, except roads (Kashiwagi 1988).

Legal Environment of Japanese Construction Industry

Both general and specialty contractors are required to obtain a government license to perform construction work in Japan. The contractors are classified in two classes upon licensing, depending on whether the contractor is willing to operate in a limited, designated area or nationwide. The identity of issuer of such a license varies as follows. A license from the prefectural governor is required to perform contracted work in an individual prefecture; a license from the Ministry of Construction is required to perform nationwide.

Any legal action undertaken by various entities involved in the construction industry must follow the Construction Industry Law. This law covers the following items: (1) Licensing; (2) contracting practice; (3) contractual dispute resolution; (4) requirement of sound technical skills; (5) evaluation

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of management ability; (6) restrictions on establishing any kind of contractors' associations; (7) governmental supervision; (8) authority of governmental construction committees; (9) miscellaneous restrictions; and (10) penalties for violation of the law.

Further, there are more than 50 other laws and statutes related to the construction industry. Those laws can be categorized into the following groups: (1) Labor law; (2) restrictions to secure public property during construction operations; (3) traffic safety laws; (4) restrictions covering explosives and flammable materials; (5) restrictions covering residential developments; and (6) pollution and public harm control laws.

Thus, all aspects of the contractor's activity are related to some of the existing laws. In addition, the diversification of authorities of the numerous public agencies, both vertical and horizontal, in the complicated governmental organizational structure results in contractors having to deal with a number of public agencies to perform their work (Kohno 1975).

Contractual Practices

Listing with Public Agency

A contractor must be designated for a bid to participate in Japanese public works bidding. To be designated for a bid, the contractor must have its name on the particular agency's vendor list. To be listed, the contractor must submit a request for nomination to that agency. Public agencies consist of a large number of offices strictly observing their hierarchy and the organizational chain of command. However, the listing of the vendors for an agency is performed independently by each agency's appropriate office. Therefore, a Japanese major contractor usually submits approximately 9,000 requests for nomination every year (Kohno 1975).

Once a contractor is listed, the public agency evaluates the rank of the contractor according to his past performance. The evaluation covers the annual contract volume, the stockholder's equity, the size of the company, current liabilities-to-assets ratio, fixed assets to stockholder's equity, net profits on total assets, years of experience in business, the workmanship of completed works, experience in each type of work, number and type of equipment owned, safety performance record, and labor welfare performance.

In reality, both the owner and the contractor know that the contractor will ask for the following year's nomination. Therefore, performance in ongoing contracts becomes the principal factor in the evaluation. The contractor's engineers involved in a public project are not only performing for that particular contract. They are also making their best effort to obtain a good score on the project for future business opportunities.

Contract Form

There are two methods for a public agency to enter into a contract with a general contractor: a contract based on designated competitive bidding, and an optional contract.

In general, a project commences by awarding a contract for construction through open competitive bidding. Designated competitive bidding is a version of open competitive bidding. This system to some extent resembles the U.S. prequalification system (Russell 1988). However, the essential difference is that the designation of a public agency for a contractor is valid through

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one entire fiscal year, while the U.S. prequalification system is instead project-oriented (Clough 1986; Kohno 1975; Takahashi 1975).

Drastic change orders or excessive additional works are rarely handled within the initial contract. These changes are generally handled by an optional contract on a negotiation basis. The additional works bound by the optional contract are likely to be small-scale works for the contractor. It is probable that the public agency will put some unexpected works that are located in the vicinity of the initial project into the optional contract. These works are frequently totally unrelated to the initial contract, e.g., repair work on a nearby public facility. Apparently, the public agency's attempt is to save mobilization costs by giving such work to the already in-place contractor.

Contract Documents

As in U.S. contractual practices, Japanese contract documents consist of written conditions, drawings, and specifications. However, the weight and priority of these documents are different. A typical Japanese contract form consists of one general-conditions document, a set of drawings, one general specification, and one special specification. The general-conditions document Public Works Standard Contract Agreement arranged by the Ministry of Construction is a standard form legally enforced in all types of public works. Virtually all public works, from central governmental projects to small municipality works, use this form.

Bonding Practices

Japanese public construction contracts do not require bid bonds, performance bonds, or payment bonds.

The designated competitive bidding system eliminates the necessity of a bid bond. If an awarded contractor refuses to sign the contract, he will not be designated to bid by the public agencies for the next fiscal year. Further, such an attitude on the part of the contractor may well elicit disapproval from other public agencies and private owners. Consequently, such a bidder would be barred from a significant share in the construction market. Therefore, Japanese contractors are unlikely to refuse signing an awarded contract.

In place of a performance bond is the practice of establishing a performance joint surety upon entering a public contract. In general practice, a general contractor who was not involved in the designation of the particular project bidding becomes the joint surety. The surety assures the owner that if the general contractor of the said contract fails to perform the services, the surety will complete the project. This is practiced on a give-and-take basis among the Japanese contractors. Obviously, risks involved in being a joint surety are unpredictable and possibly very high. This practice is only possible when based on a tradition of mutual trust, which is established through long-time relationships among the contractors (Kohno 1975).

A payment bond is also not required in Japanese public construction contracts. For the laborers, the payment is assured through the supervision of the district branch of the Ministry of Labor. For the material suppliers, there is no legal protection other than common business law. However, financial reliability is an essential factor for Japanese general contractors. Failure to pay for materials or labor damages the reputation of the company and eventually leads to its collapse.

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Design and Engineering Firms

Generally, there is no place for a design and engineering firm to participate in Japanese public works. The design and engineering work is solely performed by governmental agencies and the construction-only contract is directly let to general contractors. However, the use of private design and engineering consultants is increasing. Still, the authority of design approvals is firmly held by the public agencies. The designs are strictly supervised by the government engineers, and the private consultants can do no more than quantity surveys in the design phase of a project. The cost estimation is solely done by the governmental engineers, and the unit price lists used in this process are strictly confidential.

In field operations, government controls are very similar. Recently, a shortage of government engineers necessitated the privatization of routine works, to be done on-site by public owners themselves. Inspections, filing-out numerous reports submitted by contractors, and maintaining quality control records are tasks largely dependent on private consulting engineers working under contracts with public agencies. However, the private engineer's role is limited to routine works, and the public agencies never delegate their decision-making authorities.

Pre-Bid Activities

Preconstruction Involvement

Generally, major Japanese general contractors have a sufficient number of design and engineering staff. Such staff do not only work for private owners. Their other important role is to serve public owners by getting involved in a public project's design and engineering phases. Compared to the public organization engineers, private construction company engineers are more capable of practical applications of construction methods. They also have direct information on various technologies and their costs from their company's ongoing projects. Therefore, a contractor's engineer can provide a public agency with higher quality expertise on the constructibility and economical scheduling of the project. The more the contractor is involved in the preconstruction studies, the more he can expect to be designated for the project's bidding. Further, during such tandem cooperation with the public agencies, the contractor's cost estimation for that particular project's bidding becomes more accurate (Paulson 1979).

The preconstruction activities are not only performed by the contractor's engineering staff. Japanese engineering consultants, who were regarded as a supplier of drafting labor or as mere technology appraisers lacking the experience and ability of the practical construction operations until a decade ago, have greatly improved their status in the construction industry today. Though they are not as competent as major U.S. consulting engineering firms, Japanese public agencies are increasing the contracting of the preconstruction works to these engineering firms. However, in contractual terms, they have no legal responsibility for their designs, and thus no authority in decision making.

Marketing for Public Work Contracts

As stated previously, the first step in the marketing contractor's services for public construction work is to perform the ongoing project to the satis-

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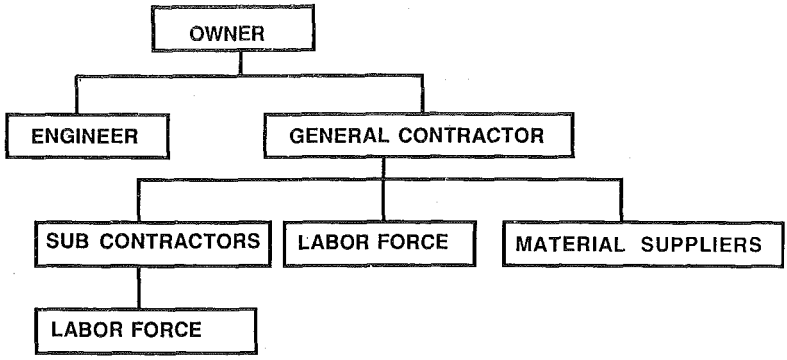

FIG. 1. Minneapolis East Interceptor (MEI) Project Contract Form

faction of the owner. Job-site evaluation puts emphasis on neatness of the work, schedule accuracy, and the public relations of the contractor. Public relations has a significant impact on the smoothness of the construction progress. Thus, a key management factor in public construction project management is public relations.

Job-site engineers, performing the current projects with future works in mind, are participating in the contractor's marketing effort. Further, the involvement of all the employees in marketing is common practice for the Japanese contractors. In the marketing operation of the company, a construction site office is regarded as an information post and a good-image deliverer. Thus, the employees involved in a job-site office are required to increase their contact with people outside the company to collect information on public needs, feelings of others about the ongoing project, and the possibility of future business chances with the organizations with which they come in contact. Additionally, focusing attention on internal affairs on the job site facilitates good communication with the owner, smooth performance of the ongoing construction, and the cultivation of good relationships for the future.

Marketing activities at the company's management level are based on the same philosophy. Therefore, supervision by the headquarters on profitability, production, safety, etc., is performed more systematically and thoroughly than is common in U.S. construction company practice. This is one of the reasons why Japanese project managers are less independent and have less authority to make decisions than do their U.S. counterparts.

Organizational Structure of Owner/Contractor Relationship

A typical form of the owner/contractor relationship in the United States can be seen in the Minneapolis East Interceptor project. The project's organizational structure is shown in Fig. 1.

Unlike U.S. practice, Japanese public project formation is somewhat complicated. The relationships between the owner, the designer and contractor's engineering staff, and the construction team at Chishima #2 Sewer Main project (Osaka, Japan, 1983–1986) is shown in Fig. 2. This example shows a complicated business relationship between the parties involved in a public project in Japan. An intensive exchange of information is practiced from the

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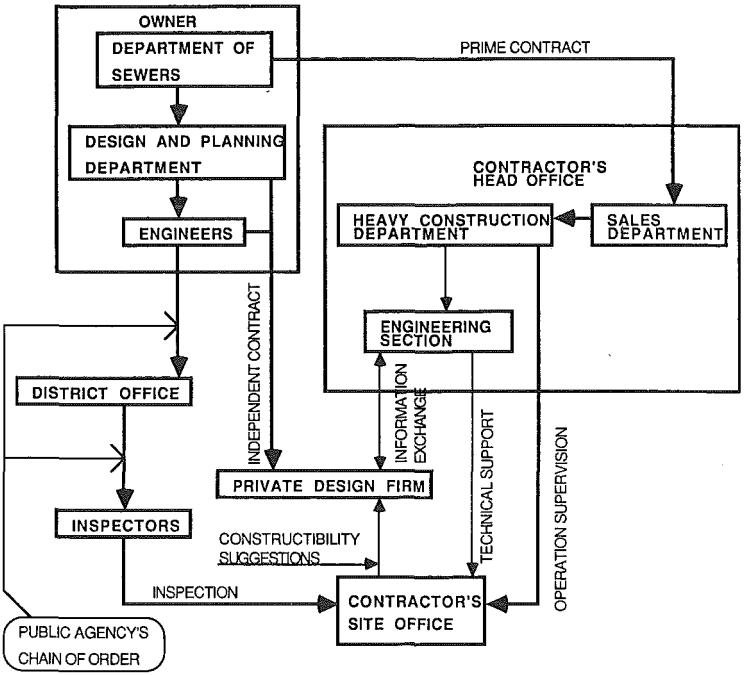

FIG. 2. Contract Form of Chishima Project

pre-bid phase through the end of construction.

Although all strategic decisions are made at the owner's headquarters, the contractor's engineering staff provides the owner's engineers with data necessary to support the owner's decisions. Additionally, the designers are also dependent to some extent on the contractor's engineering assistance.

Summary of Findings

Relationship between Owner and Contractor

U.S. Practice

In a U.S. public construction contractual relationship between an owner and a contractor, the two parties involved in a contract are strictly bound by the written statements of the contract documents. This universally accepted business custom in the United States significantly differs from Japanese construction business practices. Considering that, in the United States, public contracts are generally based on competitive bidding, and that written documents prevail over other forms of agreement in the contractual relationship, there is consequently a somewhat adversarial character to U.S. public contracts, as outlined in the following.

First, because the two parties involved in a contract have equal obligations and rights in a valid bilateral agreement, the U.S. contractors are treated more fairly by the public agencies than are their Japanese counterparts. This means that the U.S. contractors never perform any works beyond the extent

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of the specifications contained in the contract or change-order documents. Schedule delays or extra costs due to discrepancies in the contract documents are primarily the responsibility of the owner.

Second, the relationship between an owner and a contractor is oriented toward the short term. The problems of payment must be resolved within a particular contract period. It is not customary to grant favors to one party in a given contract and be rewarded in another contract. The strict condition that every problem be resolved within a single contract leads to a tendency toward sharp confrontation between an owner and a contractor in the case of a contractual dispute. It is a common practice among U.S. contractors to claim their contractual rights against the owner to obtain reasonable compensation. However, the recent trend is to avoid litigations on dispute resolutions, not because litigation will harm the good relationship between the owner and the contractor, but because the legal procedures become costly for both parties.

The third aspect is the rigidity of contractual obligations on both sides. Since written documents have the first priority over each party's other contractual communications, important modifications arising on-site must wait for complete preparation of both parties' agreement on change orders. This practice often results in a delay in the construction procedures. The loss arising from such a delay affects both the owner and the contractor.

Japanese Practice

Three important factors that demonstrate the unique nature of Japanese public construction contracts in comparison to international contracting practices are the sovereign power of the governmental agencies as the owner, the custom of mutual trust, and the long-term nature of business relationships.

First, since the Japanese construction industry has been developed under paternalistic protection of the Japanese government, the public agencies still have sovereign power over the construction industry today (Kakoto 1988). The designated competitive bidding system works to avoid an unequal distribution of contracts among general contractors (Paulson 1979). In the course of marketing a contractor's services to a public construction owner, which may result in the contractor's designation for a project, the government agents instruct the contractors to operate at the owner's convenience. Due to the pre-bid engineering assistance to owners by general contractors, the result of the bidding becomes somewhat predictable. Thus, contractors losing the bid must look for better ways to interact with owners in the pre-bid stages on future projects to better compete in the market.

The second aspect typical of the Japanese public construction market is related to the problem of *dango*. In order to maintain a stable public construction market, Japanese contractors tend to arrange the priority of access to public projects to avoid extreme competition. Since the industry's emergence, this custom has been based on mutual trust among the contractors, which has been nourished over time (Kakoto 1988). This practice is sometimes regarded by the media as dango, an attempt by contractors to form a cartel. However, except for some extreme cases arising among small local contractors, this arrangement does not amount to forming a cartel because it does not force the participating contractors to bid for a project at a designated price. An effort to reduce the bid price is up to each contractor. The

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purpose of the arrangement is to maintain a stable labor supply by maintaining moderate competition among large contractors. As a side effect, this practice works as a protection for the medium-to-small-sized contractors by preventing large contractors from bidding on small public projects.

The third aspect is the long-term relationships between owners and contractors. The designated competitive bidding system is based on each agency's vendor list. A contractor cannot be listed on the vendor list overnight. In addition, the contractors on the list must perform at a required level to remain on it. The listing is renewed every fiscal year (Kohno 1975). Thus, every contract on hand is also related to future business. As a result of this practice, contractual disputes tend to be resolved by negotiations. Therefore, unlike U.S. practice, disputes arising in public construction projects are never disclosed to the public. Additionally, Japanese general contractors do not argue over a particular item in a contract document. If a loss to the contractor arises from a particular item, and the loss can be recovered by another item, the contractor will be satisfied by such a recovery.

One aspect that is often misunderstood is the practice of a promise for future compensation. Although arrangements for payment for loss recovery may be flexible, the payment must take place within the construction contract period. An oral promise of future recovery might be ignored by a public agency, since it is under the strict financial supervision of the governmental audits, and thus cannot incur discretionary expenses. To prevent unethical personal relationships between public agents and contractor's sales personnel, the public agents are frequently transferred among various departments of the government organization.

However, if a mutual agreement in a contractual dispute cannot be reached, the Japanese contractors tend to give up the dispute. Insistence on recovery of the loss may cause the contractor to lose the favor of the public agency and may result in elimination from the vendor list maintained by that agency. Consequently, litigation as a means of dispute resolution is strictly avoided. Under Japanese business custom, being involved in a legal affair is regarded as a dishonor to both parties.

Summary of Contractual Relationships

In U.S. public construction contracts, the form of a contract is flexible. It varies from project to project, and the specific regulations also vary from state to state. Therefore, owners can prepare customized contract documents and conditions to best fit a particular project. However, once an owner and a contractor enter into a contract, its execution is rigid.

In contrast, Japanese public construction contracts are prepared to one standard, the Public Works Standard Contract Agreements. The form is extremely rigid and cannot be modified. However, the application of the contract agreement in the project execution phase is flexible and based on the mutual trust and long-standing relationship of the parties involved in the contract.

A U.S. owner-contractor relationship is solely based on written contractual documents. There are no further obligations on either party as long as the performance of each duly complies with the contract. Work not stated in the contract will not be performed until the owner gives approval of the changes suggested through change orders issued by the contractor. Thus, resulting

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delays in a construction schedule become primarily the owner's responsibility.

In Japan, a written contract is regarded as a principle agreement of both parties to perform a construction project. The general contractor also performs a number of necessary works beyond the formal contract. Such additional work will be compensated for as far as is reasonable, given the owner's budget limitations. Maintaining good communication between owner and contractor is essential. Thus, a contractor can assume the owner's approval of any change orders. There is no practice of claiming the contractor's right on contractual terms; rather, common practice includes asking for the owner's cooperative favor in resolving a problem by submitting contractor's change order applications. Schedule delays caused by necessary additional work become the contractor's responsibility even if the official approval for the request of approval for the design modification (the change order) comes at the end of the contract period.

In U.S. contractual practice, it is common to see the owners and contractors trying to pass the risks and responsibilities of construction process on to each other as much as possible. In reaction, a contractor uses every opportunity to gain the advantage in a contractual dispute, and does not hesitate to enter into litigation with the owner. This custom causes excessive difficulty during the application of new construction technologies such as the new Austrian tunneling method (NATM). NATM requires a continuous cooperative working relationship and maximum flexibility among parties involved in the contract for safe and cost-effective construction of tunnels using this method (Setzer 1988).

Legal Aspects of Japanese Public Construction Contracts

As stated previously, it is not common practice to sue for dispute resolution in Japan. Most disputes are resolved by negotiation. If agreement is not reached during the first step of the negotiation, the issue will be referred to the higher management levels of both organizations. The director of the sales department will be in charge of the problem resolution on the contractor's behalf, and the public agency will authorize its director of the appropriate regional headquarters to negotiate. However, there is relatively little time for negotiating a solution to the problem, since the nature of the conflict on payment does not become clear until the final inspection of the disputed portion of work is performed. In most cases, payment is due about ten days after an inspection report is approved by the owner.

A practical way to resolve disputes is to compensate the contractor beyond the minimum, based on the quantity of work performed on an entirely different work item in the contract. Using this method, the public agency can protect the honor of the agency staff members who made decisions on the item that initially led to the dispute. The modification of the contract price is usually handled by giving approval to the contractor's proposal for the design modification. To avoid unnecessary problems upon the government's periodical financial audit, both parties cooperate to prepare sufficient documentation in a short period of time. As government audits are not usually performed by engineers, the statements in the documentation must be easily understood, clear, plain and factual, focusing both on the engineering reasons for the design modifications in question and on their impact on project

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cost. Contractors actively cooperate with the public owner's personnel in the preparation of these documents.

Neighborhood Problems

In the United States, owners, engineering firms, and contractors seem to be more cooperative in the preparation of a public property for a construction project. In addition, society itself seems to be more cooperative than is the situation in Japan. However, behind the surface courtesy, contractors must keep in mind that if they fail to comply with the EPA and other regulatory standards, or if a third-person injury occurs, the contractor will inevitably be brought into litigation.

In Japanese public construction, it is essential to maintain uninterrupted lines of communication with those in the neighborhood of the project. Unlike private construction projects, where it is well understood by neighbors that the owner's firm is not the entity performing construction field operations, in public projects neighborhood complaints are often brought directly to the owner's office. Thus, contractors must inform those who live or work near the construction work site to bring their complaints to the contractor's site office, since complaints from neighbors brought to the owner's attention will seriously affect the contractor's performance evaluation and may lower his chances to be designated for future project bids.

Differences of Project Management

Safety Control

Safety has top priority in field labor management in both countries. However, the practice of safety control differs significantly. For example, hard hats and safety belts are the two major items for protection of the construction workers. In the United States, workers are required to wear these items only in particular sections of the job site. In Japan, they are required over the entire job site for all persons.

The social and legal pressures on contractors to implement safety control plans also differ. Besides the OSHA regulations and legal restraints, one important factor to push the U.S. contractors towards safer operation is insurance premium rates. The implementation of an adequate safety and health program will save 8% of the direct payroll. This figure implies that an ideal safety plan has an impact of about 2% on the overall cost of construction. Considering that the indirect costs for a contract range from 10–20%, the 2% figure has an important effect on profitability for the contractor (Business Roundtable 1983).

In the Japanese construction industry, the strongest motivation of the contractor to control job-site safety is the governmental sanctions on the contractor in case of a serious accident. If death or partial disability is caused by an accident, the contractor will not be designated for bidding on public works for the next several months, depending on the seriousness of the casualty. Besides the direct loss of money, productivity, time, and morale of workers, which affects the cost of a particular project, the probable loss of future business opportunity affects the entire business of the company. Therefore, safety management is standardized and organized from top to bottom in a Japanese construction company.

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Payroll Management

In U.S. construction practice, a substantial portion of the work is done by the general contractor's own labor force. This necessitates management of the labor payroll by the general contractor himself.

In Japan, a general contractor rarely employs his own labor force. Virtually all the work involved in a project is performed by the subcontractor's employees. Thus, labor payroll management is entirely the subcontractor's responsibility. However, a general contractor requires his subcontractors to submit their payroll record files to ensure their correctness. This supervision by the general contractor is required by law to protect nonunionized construction workers from possible reduced wages or nonpayment. At the same time, this information can be used to evaluate the subcontractor's productivity and cost-efficiency.

Subcontracting

The Japanese construction industry is totally dependent on subcontractors. There are two types of subcontractors in Japan.

The first type is a subsidiary of the general contractor. Although such a company is operated separately from the parent firm as either a corporation or a sole-proprietorship, it does not accept project offers from anyone but its parent firm. This type of subcontractor prevails in the Japanese construction industry. Their typical fields of specialty include general labor, steel erection, carpentry, and rebar fabrication and placing.

The second type of subcontractors are specialty contractors who operate independently and may work for multiple general contractors.

RECOMMENDATIONS

For U.S. Contractors Seeking Business Opportunity in Japan

The hierarchical structure of Japanese governmental bureaucracy is not likely to change soon. The decision making of Japanese governmental agencies may take longer than in the United States. The official decision-making procedure practiced in Japanese public and private entities is based on the *ringi* system, which literally means an internal business proposal brought up to the top management from employees at the lower level in the organization. This decision-making system constitutes a fundamental difference between Japanese and U.S. business practice. In the ringi system, while the ultimate authority of decision making lies at the top, all levels of the organization's management are involved in the process of claim acceptance and in the final decision making. Thus, this system often moves slowly and spreads the responsibility evenly over all the involved personnel (Rowland 1985).

It is the Japanese practice to share the responsibility for decision making from minor employees to top management. A contractor's claim or proposal to an owner is usually received by the lower level of management within the owner's organizational structure. Subsequently the problem resolution process starts by taking the form of *ringi-sho,* a written proposal circulated laterally and then upward in the owner's organization. Relevant personnel affix their personal seals of approval until it reaches the top decision maker in regard to the problem.

In a contractual relationship, this ringi system means in practical terms

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that the contractor cannot be satisfied by getting an oral approval of his request from the bottom personnel of the owner alone. The contractor must be sure to win the confidence of the entire group involved in the decision-making procedure. However, in the end, the decision can be implemented quickly and with full cooperation because it already has unanimous support of the entire decision-making team. As a result, in the ringi system, no single person takes sole responsibility for a mistake or a wrong decision (Rowland 1985).

The following steps should be taken by a contractor to expedite claim processing by the owner:

1. Initiate negotiations with the appropriate personnel. It is safe to begin by submitting a claim to the owner's lower level personnel. If a contractor's claim is brought directly to a higher level, the personnel at the lower level may feel that their status has been slighted by the contractor. Such a proposal or claim may then take two to three times longer than usual.
2. As soon as the claim is submitted at the appropriate level, inform the higher management, starting at the next level and then going upward. During this process, do not try to pressure the personnel to your benefit. Just clearly explain the situation at the site. Further, do not indicate to the lower level personnel that you have already received a positive response from the higher-level managers while the claim is still being processed. Such an attempt will excessively pressure the lower personnel to process the document in a rush, and consequently, it may spoil their long-term cooperative attitude.
3. In daily contacts, do not present gifts to individual employees of the owner's firm. This is a breach of law. A small gift, however, such as a can of instant coffee for an entire office, will be appreciated.
4. Whatever the result of the claim, thank the owner's personnel with whom the negotiation was initiated. The expression of appreciation can be done orally.

For Japanese Contractors Operating in U.S.

During personal contacts with U.S. public work agents, the most important thing to keep in mind is that the employees have rigidly described job descriptions. In contrast to Japanese practice, the principle of U.S. owner's agents and engineering firms' engineers is that they are bound to their individual contracts. Therefore, their responsibilities and authorities are limited.

In the English common law system, written documents prevail over oral agreements. Therefore, work to be performed on-site must duly comply with the contract documents. Among the contract documents, written conditions and specifications prevail over drawings. Work performed beyond the written agreements will not be compensated unless the general contractor receives a change order to perform work in that regard. In addition, each public contract can have its own unique conditions. These general conditions are standardized to some extent, though any of the standardized contract documents can be modified to suit the project's unique circumstances. Thus, it is important to read the documents both before bidding and throughout the contract period.

In U.S. contractual practice, silence can mean a waiver of right if there is a clause stating the time limit for the submission of the notice of claim. Therefore, submission of the notice of claim is very important. A claim will

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not harm the contractor's good relationship with the owner and the engineer. A series of reasonable claims will enhance the general contractor's reputation rather than be regarded as greedy behavior.

Since written documents supersede verbal statements during contractual dispute resolution, it is important to keep a personal diary as evidence for dispute resolution. Contractual disputes can be settled immediately after the submission of a claim, or they can go to arbitration or even to litigation. At any of these stages, a written diary can be valuable evidence of past negotiations.

The role of a field engineer is very important in securing a reasonable profit for the contractor. As well as quality, schedule, and safety management, emphasis must be placed on the analysis of contract conditions in the contract documents. Whenever the project execution encounters unforeseen or changed conditions, it is the field engineer's responsibility to review the contract documents and check whether the risk is to be assumed by the owner. If so, a notice of claim must be submitted promptly. To smoothly handle this situation, it is recommended that a standard productivity for all works involved in the project, based on the given conditions in the initial proposal, be established. A decline in productivity in the field operation will indicate deviations from contract conditions. Identifying such deviations will protect the contractor's productivity rates and profit, particularly in lump-sum, unit-price, and other fixed-price contracts.

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Appendix I. Projects Analyzed

Minneapolis East Interceptor (MWCC Project 82-55)
Owner: Metropolitan Waste Water Control Commission (MWCC)
Engineer: Consulting Engineers Diversified, Inc., Scholl & Madson, Inc., Continental Tunneling Corporation, (these three firms forming CSC Joint Venture), in association with CH2M Hill, Charles R. Nelson & Associates, Dr. Charles C. S. Song
Contractor: Ohbayashi Corporation

Wheaton Station Tail Back Tunnels (Metro Section B10c)
Owner: Washington Metropolitan Area Transit Authority (WMATA)
Engineer: DeLeuw, Cather & Company, Harry Weese & Associates
Contractor: Dillingham/Ohbayashi Joint Venture

Sangenya-Chishima #2 Sewer Main Project, Phase 2, 3, and 4 (Osaka, Japan)
Owner: Department of Sewerage, City of Osaka
Contractor: Ohbayashi Corporation

Sakitamabashi-Bridge Substructure Project, Contract #13 (Tokyo, Japan)
Owner: Kanto District Construction Office, Ministry of Construction
Contractor: Ohbayashi Corporation

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