

# A MANAGEMENT SYSTEM FOR INFRASTRUCTURE CONSTRUCTION

## Meeting the Needs of the Next Two Decades

Dr. Kris R. Nielsen  
Pegasus-Global Holdings, Inc.  
k.nielsen@pegasus-global.com

### Abstract

The current economic conditions are expected to induce a global level of infrastructure construction unlike anything that has occurred before in human history-\$35 Trillion in the next two decades. Japan and China as the two largest economies in Asia, and two of the four largest in the world have a unique opportunity to create unprecedented levels of expertise. The expertise also can allow both countries to create a services-oriented export industry commensurate with the size of their respective economies to the global economy by creating a management system for infrastructure construction in their domestic economies. This result will necessitate changes and gaining experience that can be sold and performed in the global market for infrastructure construction. Drawing upon extensive research and personnel experience in Japan and China, the author proposes changes that are outlined in his book (written in Japanese) entitled: "*Endangered Species, The Japanese Construction Industry.*" Suggestions include a change from an underlying philosophy of "mutual trust" to the predominant philosophy of "mutual mistrust" that is used in the rest of the world. Thus, the domestic construction industries of Japan and China can prepare themselves to successfully compete in the huge global market by developing construction management and contract administration competency that is not possible at the current time.

### Introduction

Building infrastructure is one of the world's largest endeavors and one of the activities that is similar the world over. In fact, in my opinion, building is one of the three most creative things that humans do (art and music are the other two). Over the last six years globally the world has been focused on the shortage of engineers and skilled workers, because never before had we been faced with a situation in which every geographic area of the world was experiencing high demand from every sector of the construction industry. Apparently the situation has been reversed in the last 6 months. But has it? Currently, construction of infrastructure globally will rise to \$35 Trillion over the next two decades. CBIC, an economic forecasting firm, projects that infrastructure spending each year for the next 20 years, for instance, will average in:

- North America - \$180 Billion
- Europe - \$205 Billion
- Asia - \$400 Billion
- Africa - \$10 Billion.

These investment levels put into perspective the importance of the systems that are used to successfully deliver such high levels of construction. Today, however, there is an unexpected dynamic that demonstrates the importance of today's topic.

The magnitude of the global recession is resulting in the worst economic conditions that the world has experienced since the Great Depression of the 1930's. This economic downturn is the result of the combining of three different but interrelated recessions. First was the United States sub-prime housing collapse which triggered a financial "liquidity" crisis. Second, the American liquidity crisis triggered a much broader and deeper banking crisis in Europe.

Third, the ensuing sharp reduction in demand in the United States and Europe triggered a plunge in exports that caused a recession in Asia, Australia and South America. Asia especially has been hard hit by this recessionary combination. In Hong Kong, South Korea, Taiwan, Singapore, for example, Real GDP (Gross Domestic Product) during the fourth quarter of 2008 fell by an annualized average rate of 15% as their exports slumped by 50%. China's GDP growth skidded to less than 7% during the same three month period, but seasonally adjusted data suggests that output stagnated even more during the quarter. Exports and GDP from Asia are still falling. The combination has occurred at such a rapid pace that governments, corporations, and individuals cannot react fast enough to anticipate and take reasoned action in an attempt to manage the economic crises. Every day they face a deluge of information that seems to be bad. All three groups of stakeholders – governments, corporations and individuals – are overwhelmed by huge amounts of data that is available instantly from the internet. They cannot absorb and understand the data because the data is so overwhelming. It is a condition of paralysis caused by an overdose of information.

This paralysis has led the later two stakeholder groups – corporations and individuals – to call upon the first stakeholder – governments – to provide a solution for them. Virtually all governments around the world have announced “stimulus packages” for their individual economies, whether they can afford the cost of stimulus programs or not. The underdeveloped countries will look to multilateral development banks (MDBs) to provide the funds, who, in turn rely on other institutions, such as, sovereign wealth funds, the richer developed countries, and private investors for funds. Developing and developed countries will depend on combinations of their own government funds and funds provided by from similar sources as the under-developed countries.

And for what will these funds be used? The “stimulus packages” will be used to stimulate local economies through the construction of new or renovated infrastructure. Infrastructure, as the American Society of Civil Engineers says, provides the “quality of life.” Infrastructure is the backbone which allows an economy to become more efficient and grow. As a result, Infrastructure allows people all over the globe to improve their condition and status. Thus, the decision by governments is viewed as a tried and true response to improve economic conditions.

In the US not surprisingly, infrastructure is major portion of the “stimulus package,” infrastructure, such as, power, transit, airport improvement, water and environmental projects, schools and public buildings. Regarding transportation, for example, there is a debate whether the construction of road and highway projects is contrary to other provisions that encourage the US to wean itself off of hydrocarbons. As a *Business Week*, a business publication, reported in early January 2008:

*Continuing to funnel money into the old system [interstate highway system] would also run up against the current transportation debate, which largely centers on breaking away from a carbon-based economy, says Kris Nielsen chairman and president of Pegasus-Global Holdings, a Cle Elum (Washington) firm that consults on infrastructure projects. "Does that mean we should build more transit systems or long-haul railroads or go to other modes that are less petroleum-intensive, or do we invest in continuing what historically we have always done?"... How maintenance and repairs of highways across the U.S. are paid for gets to the core of the carbon fuels issue. The highway trust fund, which covers those costs, is funded almost entirely by the gasoline tax, which has been dwindling for the past few years as Americans have been driving less and driving more fuel-efficient vehicles, says Puentes at Brookings. In September 2008, \$8 billion had to be shifted from the general fund to cover a shortfall in the highway trust fund, he says. What may be the most viable alternative to using gas taxes to fund the highway trust fund is sure to be*

*a hot political topic this year, predicts Nielsen... There's no shortage of road, bridge, and dam construction projects on the shelf ready to go once federal funds starts flowing. The bigger projects that are typically awarded to the big contracting outfits will probably swallow up most of this money, but more jobs would be created by financing small projects that are usually done by smaller contractors that need to finance every project, says Nielsen at Pegasus-Global. Since advance payments are prohibited by U.S. bidding statutes and since most of these contractors live job to job, they may be passed over by local governments awarding contracts that need to be assured a contractor has the financial wherewithal to complete a project. "Without some change, particularly in public bidding laws, I fear there won't be as quick and as responsive a stimulus as is being forecasted," he says. "I'm not saying at all that public bidding laws should be relaxed, but that is something that has to be addressed or considered" in order for a bigger group of cash-strapped contractors to be able to compete for parts of the infrastructure pie, he says.*

Likewise Asian governments are similarly using infrastructure construction to stimulate their economies. As indicated above, the Asian economies have been severely hurt by the global recession and so Asian governments have announced "stimulus packages" that include construction of new or renovated infrastructure. *The Economist*, one of the most read financial and geopolitical magazines in the world, concluded in the January 31-February 6, 2008 issue regarding such infrastructure spending in the Asian countries:

*That's not all bad [spending on infrastructure construction]. One consequence is that Asian governments have plenty of scope for boosting domestic demand and thus spurring economic recovery. China, in particular, has the wherewithal to make good on its promises of massive economic stimulus. A big public-works programme is the way to go, because it needs the investment anyway. When Japan spent heavily on infrastructure to boost its economy in the early 1990s, much of the money was wasted, because it was not short of the stuff [infrastructure]. China, by contrast, could do with more and better bridges, roads, and railways... If emerging Asia needs a warning of the dangers of relying on exports, it need look no further than Japan. Japan's decade long stagnation ended in 2002, thanks to a boom in exports, especially to China. Now, largely because of its failure to tackle the root causes of weak domestic demand, it is taking more of an economic [beating] than any other rich country.*

Now that you are puzzled by all this discussion of economic data and consequences, why do I open this discussion on "Management Systems of Infrastructure Construction" with a discussion on current global economic conditions? The answer is quite simple. As Stewart said in the November 2006 *Harvard Business Review*:

*Few things are more fragile than institutional memory. We build amnesia in to our processes – wiping our computers' memories and shredding our files or entombing them in distant warehouses. The very psychology is business people is memory adverse. Executives who can quote chapter and verse of next year's plans struggle to remember the rationale behind last year's goals. Managers would rather scan the horizon than look back. That's a good thing (it is the basis of business optimism) except **when it dooms us to unproductive repetition of our predecessors' blunders**. Service businesses run into problems when they copy the organizational blueprints of manufacturers (as they often do)...Manufacturers, though they must understand customers' needs, pretty much control how to satisfy them. By contrast, customers gum up service operations all the time. [Emphasis Added]*

As suggested by the quotes, there are numerous socio-economic issues raised by these economic stimulus packages involving the construction of Infrastructure, as well as, the

construction industry itself. The construction industry, whether you consider design or construction, is a service business. One that has been led around by the dictates of their primary clients for years – in the case of infrastructure, governments. The thinking of governments and construction industry firms must not let their collective lack of institutional memory “doom” their construction industries “to unproductive repetition of [their] predecessors’ blunders.” As we stand on the precipice of the greatest building boom the world has heretofore known, there are enormous challenges, and yes, also opportunities to improve the way we deliver and manage design and construction. We must take advantage of the opportunities and in doing so meet the challenges successfully. There are many issues unique to various regions or countries. I will address ones that I have studied, know and been a part of here in Japan and within China, but these lessons have a broader application. Japan and China are the second and fourth largest economies in the world, and the two largest in Asia. They both have large potential domestic markets, but have chosen to rely on exports to grow, rather than expansion of their domestic markets. The purpose of my discussion is not to debate the merits of an export driven economies. I take their export orientation to be a given. As well as, the technical expertise of their construction industries to deliver infrastructure projects.

### **A Management System for Infrastructure Construction**

As many other Asian governments look to Japan and China for lessons, why don't the construction industries in Japan or China play a larger role in world markets commensurate with the size of their economies? Many underdeveloped and developing countries do not have this expertise. What is necessary so that the construction industries fill this services void? How can Japanese and Chinese construction industries deliver and manage infrastructure construction as “export services” that can be an economic benefit in this huge market for infrastructure construction in the next two decades? What must be changed to enable the Japanese and Chinese construction industries to provide these services in the global market at levels analogous to the size of their economies to the global market?

In Japan, for example, the construction industry has been held back by the approach of the Japanese government for years. In the global economy, a measure of a country's economic success is its willingness to subject its domestic industries to the vigor of foreign competition. To do so says to all stakeholders that its industries are able to compete on an equal footing with the rest of the developed world. In fact, that is what Japan did in 1996 by committing to the World Trade Organization. Japan's WTO committed its domestic civil works infrastructure construction market would be open to foreign competition in ten years. This willingness was the result of having a highly skilled civil works infrastructure construction industry that had developed a world class reputation for technical excellence and quality in its implementation. This result reflected the strong hand of government, and, in addition, the uniqueness of Japanese culture. It also had allowed Japan to rapidly develop so that by the late 1980's it was a leading economy in the world. When a country continues this historical development pattern, it moves from an economic category of “developing” to an economic category of “developed.” When a country, such as, Japan has achieved the distinction of becoming developed, it no longer has to protect its civil works infrastructure construction industry.

Thus, Japan made a commitment to the WTO when its economy had reached the “developed” category status. Japan thought that the civil works infrastructure construction industry could adapt and be prepared to compete with the world in its domestic market and go forth and compete and expand in the rest of the global market. The process adaptation that Japan used has not been successful because of collective amnesia has doomed the construction industry to unproductive repetition of their predecessors' blunders. As a result, the construction industry's share of the exports is relatively low compared to other industries in which the Japanese have world-leading technological expertise and the government has

continued to allow the domestic construction industry to in effect be “closed” despite their WTO commitments. Japan enacted minor changes to the Construction Business Law in the ten years (1996-2005) that Japan envisioned that a transition period would be required.

Japan did not contemplate, however, that such an “open” market would require a much different way of project management and contract administration skills. As a result, the Japanese government undertook various action plans in this ten years period aimed at restructuring the domestic civil works infrastructure construction industry. These laws addressed various issues of quality, project transparency, but kept intact basic framework with which it had protected the civil works infrastructure construction industries. The Japanese government did not address the key management competencies that are necessary to be global players. The results are quite different in actuality then what was expected. The Japanese government actions have not resulted in change and capacity building for either owner/employers (governments) or contractors. Specifically, the lack in understanding and vision of what such management competencies encompass has not prepared the civil works infrastructure construction industry to compete with global competitors either in the domestic or global market.

In contrast, the Chinese government promoted participation in China’s construction and engineering services market by foreign companies. The need for infrastructure has been and continues to be so large, the Chinese government has opted to allow foreign firms to compete for infrastructure construction. The Construction Law and enabling regulations specifically incorporate Standards Conditions of Contract from the global market. Infrastructure construction can be undertaken by majority owned foreign construction companies, and wholly foreign owned construction companies on a more limited basis. This situation is in stark contrast to what is allowed in Japan. And, the contract and the Contract and Standard Conditions of Contract that has been used are thus consistent with those used in the global market. Thus, for infrastructure construction, construction management and contract administration are based on global practices. In addition, use of these international practices allows domestic contractors every day to learn the skills that are used internationally thus building a competence the Chinese construction industry can use outside of China, which it has been able to do with increasing frequency. The Chinese construction industry, however, still must cultivate the development management skills that are not just suitable to China, but to the global market in general.

What I want to focus on is the development of a management system for infrastructure construction that will enable expansion of both a domestic construction industry and exportable construction services that can compete internationally successfully. In Japan the construction industry structure and legal foundation are governed by the Japanese Construction Business Law. As I have suggested in my book (written in Japanese) entitled: *“Endangered Species, The Japanese Construction Industry.”* the law and the Standards Conditions of Contract must be modified to allow a construction management system that enables the domestic construction industry is to adapt a system that will assist it in competing on a larger scale, in other words, allow construction to function and compete as a world class export industry similar to the electronics and auto industries.

Omoto in a 1996 issue of the *International Construction Law Review* compared the Japanese Standard Conditions of Contract for Public Works with the requirements of the Institution Civil Engineers (ICE) standard contract used in the United Kingdom in 1992 which served as the basis for the FIDIC (Fédération Internationale des Ingénieurs-Conseils) Contracts and the associated Standard Conditions of Contract that are recognized throughout the world as the key documents governing the construction of infrastructure. With respect to international infrastructure construction, the following was noted regarding Japanese contractors experience operating in the global market under FIDIC Standard Conditions of Contract

*“Over the past three decades, Japanese contractors have acquired a lot of experience in undertaking international construction projects under the FIDIC Conditions [of Contract], but they are still lacking sophistication in functional knowledge of the full ramifications of the FIDIC Conditions, and therefore experience difficulties in negotiation of, and in dealing with problems of performance in, contracts based on those Conditions [of Contract]. The consequence of this situation is often additional incurred costs or delay or both, leading to a bad financial result for the Japanese contractors. This does not necessarily mean that Japanese contractors lack negotiation skills or management capability in general; rather it means that they have applied (and many are still applying) the methods and practices of Japanese domestic construction contracting to the performance of international contracts... And one might think those Japanese forms to be commercially practical...a detailed examination...show[s] that these forms definitely are lacking, not only in precision in their conditions and the procedural requirements necessary for the proper performance of construction contracts, but also a mechanism for dealing with the situation in which no agreement is reached by negotiation between the parties, especially in respect of extension of time and adjustment to the contract price... Commercial [mutual trust] depends upon economics, therefore, economic power fills in the vague details in Japanese construction contracts...The Japanese standard forms of construction contract together with the bidding system and subcontracting system will not work well in the future performance of a contract in a truly competitive market, which is demanded, not only by outside pressure, i.e. the involvement of foreign nationalities, but also by the economic situation of the Japanese domestic market, i.e. persisting recession.”*

Now what is meant by the term “mutual trust?” It is a principal that peculiarly under lays the Japanese Construction Business Law. The Japanese Construction Business Law recognizes the dominance of the owner/employer—the Japanese Government or sub-divisions for essentially all infrastructure construction. The Construction Business Law requires the use of a written contract that incorporates the principle that: *“parties executing a contract for construction work shall conclude a fair and equitable agreement in mutual good faith”* —a concept of “mutual trust” in the fairness of the dominant Government as owner/employer. The Construction Business Law gives the Government the authority to determine disputes unilaterally, but in practice the Government frowns upon disputes in the construction industry.

Most countries, however, have socio-economic systems that embody some form of Western legal philosophy. These systems have been adopted or forced on countries all over the world. Most of the revolution that has led to global commerce in the last two centuries is based on Western legal principles. When the global community or individual countries have funded or financed infrastructure construction, contracts and conditions of contract are similarly based on these principles. Thus, these principles have shaped the manner in which owner/employers and contractors expect the other to act in virtually all global areas. A body of practice and expectations thus has developed for infrastructure construction, and has evolved into “industry standards.” Standards that assume the parties are “equal.” Also, a contractor merely commits to executing and delivering the constructed project. The owner/employer has an obligation to see that it receives that for which it pays. The contractor only has to deliver a project that the owner/employer or his agent (the engineer) has defined, in other words, the scope and quality in the design documents, and time specified. The contractor can expect that the design on which it is asked to give a price is based on that scope, quality and desired time of performance. It is presumed “constructible.” If that is in error, the contractor is entitled to a demand of change to the scope, quality, time of performance, and/or cost. The owner/employer and the contractor agree not to interfere with each other, purposely or not. The owner/employer will provide interim payments

provided the contractor performs and meets the interim measure – normally either on a percentage completion or some other measurable milestone.

Therefore, in contrast to the concept of “mutual trust,” the fundamental basis of contracts in global market is a concept of “mutual mistrust.” Under “mutual mistrust,” an owner/employer believes that the contractor inherently will try and execute and deliver some less than that for which is obligated; that is, the contractor will provide less scope or quality and/or take longer. On the other hand, the contractor believes that owner/employer will demand more than the contractor has agreed to execute and deliver; that is, the owner wants more scope or quality and/or delivery in less time. The owner/employer and contractor are expected to “protect” the benefit of their “bargain,” as there is not “anyone who will do so for it.” The allegedly injured party has an obligation to the offending party to give reasonable notices of its failure or the presumed failure to “live up to the bargain.” The noticed party can agree, negotiate a solution, or dispute the assertion. Because the owner/employer and the contractor may have different interpretations of what each committed in the consummation of their bargain, there is a presumption that the allegedly injured party may go to courts to recover the benefit of its bargain. When a party does so, it is entitled to the bargain to which it agreed, nothing more or nothing less.

As has been indicated by the observations of Omoto above, the management skills of project management that is derived from contract administration that is necessary in executing projects based on a culture or philosophy of “mutual mistrust” is the specific management ability that the Japanese construction industry lacks. In the global market, the expectation is that “everyone” is familiar with the FIDIC contract documents and the Standard Conditions of Contract. Therefore the changes that I propose use the FIDIC forms of contract documents to guide and emphasize the suggested changes to the Japanese Construction Business Law. The recommendations below are based on vast experience as to what the global market requires and expects, but as recommendations, they should be merely a starting point. The suggested changes will foster construction management and contract administration skills sets that will necessarily advance the Japanese construction industry.

#### 1. Form of Contract

First and foremost, the dominant position of owner/employers (the Government) must be eliminated from infrastructure construction contracts. This change will recognize the equality of contracting parties, and not perpetuate the concept of contracting between a benevolent master (the Government) and its servants (the contractors). This one change to the Japanese Construction Business Law will make the practice of “mutual consultation” less necessary. FIDIC, in prior editions of the Conditions of Contract, required parties as part of the Dispute Resolution process to initially negotiate their differences in good faith, but the good faith was from a philosophy of “mutual mistrust.” Thus, if the Japanese Government felt that “mutual consultation” was still desirable, they could equate the practice to negotiation in good faith as a first practicable step, but not make it overwhelmingly the “only step.” The issue of equality of the parties only will become a reality for the construction industry through the procedures, such as, those that create the concept of “mutual mistrust.”

#### 2. The Bidding System

The bidding system in Japan is not transparent. The bidding system does not meet what parties who operate the global market expect. One method for changing the bidding or tendering procedures could be the use of guidance that is suggested by the UNICITRAL (United Nations Commission on International Trade Law) Model Law on Procurement of Goods, Construction and Services as regards the bidding or tendering processes. Although the law has been enacted by a few countries, legal commentators are in general agreement

that the law is generally consistent with the WTO's Agreement on Government Procurement (AGP). The Model Law is based on concepts of "mutual mistrust" and reflects best practices from the global market. The Model Law suggests the following regarding:

a. Qualification of Suppliers and Applications for Qualification

To ascertain the qualifications of suppliers or contractors, the Model Law sets out broad criteria. The AGP only limits pre-qualification criteria by reference to the need not to discriminate. The Model Law requires public notification in named newspapers and for tenders in international newspapers. The invitation to bid or tender and invitation to pre-qualify must contain certain information including the nature and quantity of goods and the location of the construction, the timetable for supply and construction, the criteria and procedures to be used for evaluating qualifications, and a declaration that suppliers or contractors may participate regardless of nationality or, where there is some restriction, what that restriction may be. The notice must also make it clear where the documents can be obtained, the price range, the currency, language and place and deadline for submission of tenders. The charges for any documents must be no more than cost and any documents must clearly set out all the requirements relating to the procurement. These requirements are quite detailed and refer to all information likely to be required of a tender, including the names of officers who can be contacted in order to provide information and "who are authorized to communicate directly ... with contractors . . . without the intervention of an intermediary." The documents must also set out the various rights which bidders have under the Model Law, including the right to seek review of an unlawful act or decision. The qualification criteria adopted by Japan for foreign companies, although cosmetic in nature, meets these criteria. These criteria should be adopted for all parties, foreign and domestic.

b. Non-discrimination

The Model Law would require that criteria for evaluation be published and that any evaluation be made in accordance with those criteria. The Model Law expressly prohibits discrimination on the basis of nationality or on criteria which are "not objectively justifiable". The AGP is consistent, but the breadth of practice is questioned by some commentators.

c. Pre-qualification

The rules for pre-qualification proposed in the Model Law require the procuring entity to provide considerable detail about the manner and place of submission. The procedures that have been established domestically in Japan are consistent with both the Model Law and the AGP.

d. Nationality of Suppliers

The Model Law specifically permits suppliers or contractors to participate in procurement proceedings without regard to nationality. However, an exception is permitted where the procuring entity decides on grounds specified in the procurement regulations, or according to other provisions of law, to limit participation in procurement proceedings on the basis of nationality. The AGP makes some form of discrimination possible unless parties are nationals of countries that have signed the AGP. In Japan, bi-lateral trade agreements accomplish the same result, but in effect have been used to limit access to domestic markets.

e. Form and Language of Communications and Documentation

The Model Law forbids rules which are discriminatory and propose (as an option) that notices be published in a language understood in global market. This is consistent with the spirit of the AGP. This language is typically English, and Japan in the last two years has been consistent with this requirement. But, it is only projects that fall within the purview of the AGP.

f. Procurement Records

The Model Law requires careful record keeping with respect to all procurement proceedings. This requirement is consistent with the AGP, but only with respect to those projects which fall under its purview. In the interests of transparency, all decisions on civil works infrastructure construction (unless there is a security or related reason that is known to all bidders) should be documented and appropriately available for public scrutiny.

g. Reasons for Rejections of Bids or Tenders

The Model Law permits the procuring entity to reject all tenders for no reason, but the AGP only permits rejection of all bidders or tenders, if such is in the public interest. In this area the Government has used the right to reject all tenders for no apparent reason as a means of effectively employing the Designated Competitive Bidding on infrastructure construction and to obtain a bid for the price that the Japanese Government has determined the project is worth. Rejection of bids or tenders and the defining the allowed reasons therefore must be spelled out in the procedures and be consistent with a revised Japanese Construction Business Law. The reasons must be limited, recorded in the procurement records, and open for public scrutiny, thus lending transparency to the process.

h. Public notices and anti-corruption provisions

The Model Law requires public notice of procurement contract awards, which is consistent with the AGP. The Model Law also requires procuring entities to reject tenders where there are offers of inducements by suppliers or contractors.

i. Methods of Procurement

The majority of infrastructure construction in Japan is subject to the rules for Designated Competitive Bidding, under which many of the abuses described earlier have occurred. Thus, Designated Competitive Bidding should be forbidden except where there are specifically described situations, such as, emergency construction, etc. The Model Law permits restricted tendering in two broad sets of circumstances. The first allowed exception is economy and efficiency where the goods, construction or services are available by reason of their highly complex or specialized nature only from a limited number of suppliers or contractors. Thus, the Designated Competitive Bidding should be limited carefully to such circumstances. The second is that the time and cost required to examine and evaluate a large number of tenders would be disproportionate to the value of time goods, construction or services to be procured, which should accommodate procurement for small civil works infrastructure construction, especially by local townships.

j. Submission of tenders

The Model Law recognizes that procuring entities may need to change the date for submission of tenders and permits them to do so where one or more suppliers or contractors may not be able to submit bids or tenders by the deadline owing to circumstances beyond their control. Under the Model Law is a blanket prohibition on the opening of bids or tenders received after the deadline. This latter provision is contrary to the provisions of the AGP which permit late receipt where this is not prejudicial to the process and where the lateness is outside the control of the bidder. The procedures that govern Japanese infrastructure construction are generally adequate, provided that the use of Designated Competitive Bidding is restricted.

k. Opening and Evaluation of Bids or Tenders

The Model Law addresses procedures in some detail. Bids or tenders must be opened at the time specified and all bidders are permitted to be present at the opening. The details of each tender that are requested in the solicitation must be announced at the opening. Once the bid or tender is open the procuring entity may seek clarifications of the tenders in order to assist in the examination evaluation and comparison of them, but no change in a matter of substance in the bid or tender may be sought, offered or permitted. A bid or tender is not regarded as responsive if it does not conform to all the requirements set out in the bid or tender solicitation documents unless the non-conformity is minor and does not materially alter or depart from the requirements. A bid or tender which is not responsive may not be accepted. These procedures are consistent with the AGP.

l. Review and Appeal

The Model Law allows review where a supplier or contractor claims to have suffered or is likely to suffer loss or injury due to a breach by the procuring entity. Complaints must be made first to the head of the procuring entity and must be submitted within a defined period of time. The head of the procuring entity is not required to consider a complaint after procurement contract has entered into force. If the complaint is not resolved by agreement the head of the procuring entity is required within 30 days to issue a written decision indicating his reasons and any corrective measures. If he does not issue a decision or the complainant is dissatisfied further remedies will be available. The Construction Business Law provides for such an administrative review body. But, it is subject to the types of transparency conflicts from the use of Administrative Guidance discussed above. The Administrative review body should have a detailed brief, possibly limited to review of such bidding disputes, and not engage in any type of conciliation or mediation. Then the administrative review body is not subject to abuse, or the perception of abuse.

3. Subcontracting

In Japan there are over 5,500,000 licensed construction contractors and 99% of them are small and medium-sized firms consisting of unincorporated individual firms and incorporated firms with capital less than ¥100 Million. The issue of subcontracting becomes bound up with the licensing laws for contractors engaging in civil works infrastructure construction. There is a typical hierarchy of subcontractors. Almost all of the licensed contractors are labor only, with the contractor generally providing or renting necessary equipment. The work is generally negotiated by the contractor with these labor-only subcontractors, after the contractor has tendered its bid and the Owner/Employer awarded the contract to it. The subcontract agreements are simple, often oral, and provide that the subcontractor undertake a specific part of the works with the general contractor responsible in all respects to the owner/employer. In the case of civil works infrastructure construction, the contractor is expected to control cost, quality, safety and the date of completion. Because of the

Japanese tradition of "tiered" subcontractors, the contractor's importance to these dependent labor subcontractors is very large, and thus the Japanese Construction Business Law extensively prescribes responsibilities of contractor and subcontractors with respect payment to subcontractors. Similar to the global market, the contractor can chose what portion of the works it will subcontract, but the contractor is forbidden from subcontracting all of the works to one or more subcontractors.

The key element is to have written agreements with specialist subcontractors. While FIDIC does not provide much guidance, it follows that the Conditions of Subcontract should be "back-to-back" with the FIDIC contract. Thus, to the extent the Construction Business Law makes a contractor responsible to the owner/employer, the Construction Business Law should require a subcontractor to be responsible to the contractor for its defined scope in the same manner as the contractor is to the owner/employer (except for price). Furthermore, under FIDIC a contractor is to inform the owner/employer or his agent (typically the Engineer) within a prescribed time (normally 28 days of the subcontractor commencing work) of its intent to subcontract an identifiable scope, the particulars regarding such contractor, and the start date of such subcontractor. A comparable provision in the Japanese Construction Business Law should require all subcontractors to be used on the construction project to be identified, the scope of the works subcontracted to the specific subcontractor, and information that is required of foreign contractors. The issue of project management with contract administration between the contractors and subcontractors must be handled commensurate with such the change in the contracting philosophy. (The issue of the licensing of contractors and subcontractors is beyond the scope of these recommendations, but the need to address construction management and contract administration skill competency is equally as important to subcontractors.)

#### 4. Dispute Resolution

The FIDIC process for dispute resolution provides for a multi-step process that is conceptually the same as provided in the Japanese Construction Business Law. The FIDIC approach and that of the Japanese Construction Business Law, however, are decidedly different. The FIDIC procedure for settlement of disputes by a DAB may be broken down into six steps. The purpose of the pre-arbitral DAB procedure is for both parties and, subsequently, any arbitration panel to have the benefit of a decision of the DAB on every dispute. Globally, sound construction management that uses contract administration practiced both parties will result in protecting their own interests – the bargain that each reached. Thus, the dispute resolution under FIDIC embraces the philosophy of "mutual mistrust" that forces both parties to develop project management practices and contract administration processes that reflect global best practices. In contrast to a DAB, the current practice in Japan relative to disputes in the construction industry is to employ the Adjudication Committee as established by the Japanese Construction Business Law on every contract. Effectively, the Adjudication Committee attempt to amicably settle disputes, but if necessary, serves as mediator and then arbitrator then serves engages in dispute resolution. The process is not transparent. With the necessary change to the Japanese Construction Business Law recommended, the methods of dispute resolution should be changed to mirror what the global market uses.

#### 5. The Role of the Engineer

The common element in the global market is that decisions are ultimately made by a perceived independent third party, if the parties do not agree. There is not such a party for infrastructure construction projects in Japan. The owner/employer of infrastructure projects in Japan has been the Government. In 1959, the Japanese Ministry of Construction (today

the Ministry of Land, Infrastructure and Transport) issued a Circular entitled “Methods of Contracting for the Design of Civil Engineering Works,” which issued instructions regarding the both design consulting and construction consulting. The circular established the principle of separation of civil works infrastructure design from its construction execution. The Government has historically planned and designed civil works infrastructure projects and fulfills the agent’s role during their construction. The Government was responsible for the design adequacy of infrastructure construction projects, and the contractor provided engineers who execute the projects accordingly. The change to Japanese Construction Business Law will have the corollary benefits of fostering a Japanese consulting engineering industry similar to what is found in the global market place, and allow all Japanese engineers to be trained in contract administration and a full scope construction management not just what occurs in Japan.

## 6. Changes is in the Japanese Standard Conditions of Contract for Public Works

The Japanese Standard Conditions of Contract for Public Works must be changed to allow for the absorption of the concepts of the global market into the domestic infrastructure construction market. But what is the real meaning of globalization for the domestic infrastructure construction industry? As discussed earlier, “globalization” will allow the Japanese construction industry to gain necessary experience under a construction management system that accepts “mutual mistrust” as the basic philosophy of construction project execution. From such changes the resulting system demands, the engineers will have to change and be trained in the procedures of executing infrastructure construction industry with project management and contract administration that meets global standards. Through contract administration, the terms to which every stakeholder in the industry is established when they are defining the “bargain” for which they bid or tender, and then are the “rules” by which execution is judged, evaluated, and monitored. Thus the construction industry will gain experience to enable it expand the exporting of their services to the global market, and to successfully become a major competitor in the global market. To be practical and effective Japan must either adopt a form similar to the FIDIC forms for civil works infrastructure construction, or adopt clauses that are comparable. While Japan could adopt FIDIC, there is much that is comparable in the current Standard Conditions of Contract for Public Works provided that the form of Contract used for infrastructure construction is changed as recommended.

The discussion that follows is with respect to three major provisions of such Standard Conditions of Contract in concept. Other clauses will be acceptable by changing the manner in which some clauses are interpreted in light of a revised or new Japanese Construction Business Law. The suggested changes must of necessity be viewed with the suggested changes to the Japanese Construction Business Law which the Standard Conditions of Contract for Public Works is the means of implementing the change that will foster both development of construction management and contract administration skills. The Japanese Conditions of Contract for Public Works must reflect what the parties will need to record, maintain, and monitor, because it will train both owner/employer and contractor personnel to adequately compete with foreign competition and function in the global market. Therefore, the recommendation is to meet the FIDIC terms in concept. As regards specific wording of the requirements, it is not necessary to use the exact FIDIC language, but wording should not deviate extensively, because that will again make Japan’s construction industry unfamiliar with the global market.

a. Contract Price and Payment

Inherent under FIDIC contracts is the concept that details of the tendered or bid price are provided to the owner/employer, as requested, and incorporated into the contract on construction projects. This requirement includes providing detail relative to the Quantity Survey (or Bills of Material) and any Provisional Sums that the contractor must include in the arriving at the lump sum it is tendering or bidding. Typically, if the final measurement of a specific quantity is between 90% and 110% of that specified, then the owner/employer will pay the tendered unit price times the actual quantity. If the quantity falls outside this range, and the parties cannot agree, then the dispute resolution procedure is followed to determine actual quantities and the pricing. This situation is good example of the importance of the contract administration that is required the part of both parties. The construction management teams of both the owner/employer and the contractor are required to monitor the conditions under which the one party specified what was desired and the other offered in its tender or bid. The party that documents and gives timely notice will be in the best position to establish what is different than what it had assumed and the basis of the assumptions, the reasonableness of the assumptions, and the required performance. All the construction management teams are then expected to monitor whether the work was included or not included within the intent of the items that are the subject of the difference.

Each of these items has various assumptions of what the owner/employer or the contractor must define in establishing the bargain that each expects. The contractor thus will seek payment that results from an alleged change with which the owner/employer will agree or disagree. In general, the risk of an increase in construction costs will be borne by the contractor on the theory that the contractor is best placed to control this risk by virtue of having considered all available information that would affect its tender and having provided an appropriate contract price in consideration of all labor and materials necessary for the design and execution of the works. Consequently, the contractor will generally be unable to seek a price increase in the event of changes in the cost of labor or materials unless the assumptions that it reasonably assumed and recorded were different in each of the above situations.

Likewise, the owner/employer will generally be unable to seek recovery of costs from the contractor, for example, unless it can establish a causal connection to a failure of the contractor, and the costs incurred were reasonable. These examples require the recordation and monitoring. Currently, the owner/employer (the Government) in Japan is not requiring such information be maintained, or even providing the means for doing so, through the Construction Business Law and the Standard Conditions of Contract. Under the Japanese Conditions of Contract, the details of a Quantity Survey, schedule, etc. are not binding, so it is not necessary to keep records of what either assumed, because in it is not binding. It merely serves a guide of what was thought at the time of contracting. Many times, I have had to assist Japanese contractors "re-construct" what they assumed on international construction projects!

In Japan little significance is placed on written records in the construction industry. Rather than record assumptions and monitor changes, the Japanese construction industry uses dependent relationships -- contractor with the owner/employer, contractor with subcontractors, etc. The Owner/Employer (the Government) for civil works infrastructure construction makes an advance payment and installment payments to enable a contractor to procure materials, hire labor and establish an operating fund. With the change in the Japanese Construction Business Law, a change in what the contract requires is necessary as suggested earlier with respect to contract price and the breakdown that may be required. The real difference

between Japan and the global market is with respect to Variations. With respect to payment, there is little difference from what the global market expects.

b. Variations

Almost every contract for construction used globally has a variation clause which allows the owner/employer to order variations for its convenience. The FIDIC contracts allows the owner/Employer to order a variation at any time before the works is taken over at completion and is reasonably consistent with the design of the works. In case of extra work on Japanese construction projects, the Standard Conditions of Contract for Public Works reflects a contract that establishes the dominant position of the owner/employer (the Government) and the practices that it engenders. The contractor is reimbursed after it has executed such extra work, because of a “work first and pay later” philosophy that the Government has demanded and continues to enforce. The contractor is thus placed in a relatively unfavorable cash-flow position. The Standard Conditions of Contract for Public Works require Bills of Quantities to be submitted and approved in situations “when...a large number of uncertain factors, etc.” exist, but they are not “binding” on the either party. Furthermore, the Japanese Standard Conditions of Contract for Public Works, what is required is monitoring the after-the-fact cost consequences and then making an appeal the Owner/Employer who makes a unilateral determination in the case of disagreement. This unilateral practice is unique to Japan and not accepted in the global market. The practice only can be sustained because of the contract conditions allowed by the Japanese Construction Business Law. With the recommended change in the contract suggested earlier, minor adjustments in the provisions of the Standard Conditions of Contract for Public Works would be necessary with respect to when and how changes are handled, whether instigated by owner/employer or the contractor, such as, the manner in which a change is submitted and evaluated.

Variations by their nature affect the scope, quality, time of performance, or cost, or a combination of any of them. Global best practices in construction management and contract administration, as illustrated earlier, are driven by assuring a party achieves the benefits of the bargain that it entered into but for the variations, changes, or other interferences that the other party caused. The Japanese Standard Conditions of Contract for Public Works therefore must specify the timing parameter for notices and resulting actions on the part of the owner/employer, the contractor, and the engineer (assuming that Japan establishes its engineers in a role similar to the global market). Therefore, Japan must pay careful attention to all the timing requirements required, which should be reflective of those found in the global market.

c. Time of Performance and Project Delay

In the global market, as discussed earlier, the owner/employer's (or the engineer's) construction management personnel and the contractor's construction management personnel are expected to utilize the schedule or programme submitted by the contractor. FIDIC contracts require essentially the same data. In the global market, construction management teams for all parties on infrastructure construction projects employ the management of time to record the assumptions that define the bargain. In then monitoring the schedule or programme regularly, variances from plan can be identified, alternative means for achieving what constituted the bargain can be planned, forced divergences caused by the other party can be measured, and required notices can be given. The FIDIC contracts require the parties' construction management teams to use the schedule or programme proactively. There are specific requirements to monitor progress, measure performance, etc. Then, the

FIDIC contracts allow the parties to seek time extensions to the project completion date, if they are warranted.

But, the requirements are significant and to meet them is difficult if the contract administration is has not been used through out the execution of the civil works infrastructure construction project, as the examples earlier attest. Where the owner/employer orders acceleration, for example, because the contractor is not making the progress, the owner/employer's contract administration will have to prove that contractor was the cause of the delay, not itself. Where a party believes it is entitled to an extension of time or the must maintain the time for completion, the other party can recover cost impacts, but the proofs are extensive. Also as indicated earlier, the result is that project management personnel from both the owner/employer and the contractor become exceedingly skilled in the contract administration that is necessary in the global market for civil works infrastructure construction projects.

In contrast, under the Japanese Construction Business Law and the Standard Conditions of Contract for Public Works, *"the Japanese are not used to increases in budget, they're not used to extensions of schedules or programmes, and they're not used to people saying what they mean."* Once a Japanese contractor has committed itself to the completion date for a construction project, the owner/employer expects the contractor to achieve it. If for any reason those committed objectives seem threatened the contractor is unlikely to raise this with the client. The owner/employer expects that contractor's problems in completing the project are to be resolved by the contractor. Under the contract of dominance provided by the Japanese Construction Business Law, if the contractor's problems are caused by the owner/employer (the Government), it is to be resolved by an agreement reached with respect thereto, but it is resolved because the Government makes a unilateral decision thereto. The Japanese Standard Conditions of Contract for Public Works require a schedule or programme to be submitted, but it is not binding on either party. Owner/employer and contractor personnel thus have no need to engage the contract administration or construction management practices related to a schedule or programme as a result. The contractors are focused only on the completion in a timely manner, and must incur the costs first.

The Japanese practice is not accepted in the global market. Attention to the details of scheduling assumptions (initial and subsequent revisions) and the causes for deviations there from is of paramount for global infrastructure construction projects. Japanese contractors have a difficulty with time of performance issues, as I have experienced, because of the lack of experience forced on them in Japan. The Japanese Construction Business Law and the Standard Conditions of Contract for Public Works must be changed to demand conditions that are required globally.

### **Concluding Thoughts**

I had asked the following questions: As many other Asian governments look to Japan and China for lessons, why don't the construction industries in Japan or China play a larger role in world markets commensurate with the size of their economies? Many underdeveloped and developing countries do not have this expertise. What is necessary so that the construction industries fill this services void? How can Japanese and Chinese construction industries deliver and manage infrastructure construction as "export services" that can be an economic benefit in this huge market for infrastructure construction in the next two decades? What must be changed to enable the Japanese and Chinese construction industries to provide these services in the global market at levels analogous to the size of their economies to the global market?

The answer is that both Japan and China can develop exportable construction industry services commensurate with the size and importance of their respective economies to the world economy. China has to gain necessary experience with global best practices of construction management and contract administration. Japan can train their construction industry through a change in their management required in the construction of domestic infrastructure. The Japanese have not succeeded in the development of needed levels of management competency or in establishing the counter measures necessary to prepare the industry – specifically the creation of “contract administration” skills necessary to perform construction management that meets global standards. Contract administration is the key function that is required of engineers to succeed in construction management and succeed in the global market. The necessary key global market’s principle of “mutual mistrust” which requires parties to develop these management competencies and the Japanese market’s principle of “mutual trust” does not. If Japan does not change its construction industry, it will truly become “An Endangered Species” and will succumb to the mistakes of their predecessors!

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