Impediments in Construction and Engineering Services

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4.1.1 Nature and Characteristics of Construction and Engineering Services.

CPC Code Number 3 is Construction and Related Engineering Services.

Construction and Related Engineering Services have 5 Sub-Codes 3A, 3B, 3C, 3D and 3E. 3E i.e., others is excluded from this study since Mr. Tom Warren did the same.

Across the board of CPC Code Number 3, there are two kinds of services, i.e. (1)Construction Service and (2)Engineering Services. The nature of their business is not identical each other but they are closely related each other and often complementary each other. The followings are the nature and characteristics of each service transaction(Table 4-1).

Table 4-1

Nature and Characteristics of Engineering and Construction Service

	Engineering Service (Consulting, Conceptual Design, Detailed Design, Supervision)	Construction Service (Site Preparation, Civil Work, Building, Procurement)
Contents of Service	Highly knowledge-intensive Service by a small numbers of experts. Actual implementation of engineering service requires a small number of skilled workers (e.g. drawers) and/or technical experts with professional license and	Efficient construction manage-ment (Cost, Schedule and Spe-cification) by a few members of the project management (e.g. Project Manager). Actual

	experiences. Foreign professional license may not be admitted by the host country.	imple-mentation of civil work and/or building requires many unskilled manual workers whose trans-national mobility is usually under strict control.
Characteristics of Service	Originality and creativeness in terms of Conceptual and Detailed Design by using three dimensional personal computers are required. Service can be provided from other country by telecommunication. i.e. Borderless. Supervision in terms of cost, schedule and specification can be done by a small number of engineers. Therefore added value per person is very big.	Actual implementation requires many unskilled workers who engage in manual jobs of construction. From the viewpoint of site management, unit cost per a worker and time consumed per a worker to complete an unit of specification are closely recorded. Construction service is a site related i.e. real estate and endemic service.
Period of Service Rendered	Consulting and Designing service is rendered mainly during preparation period for a project. Supervision is rendered during construction period.	Construction Service is rendered during construction period.
Service Value	10-20% of total project cost, but added value per a worker is very big.	80-90% of total project cost, but added value per a worker is relatively small.

Engineering service shall face more such market access limitations as bilateral engineering service agreement, entry restriction (joint venture requirement), foreign equity limit, immigration control, local content rules and professional licensing requirement, than construction service, partly because engineering service by companies in developing countries is less competitive both technically and managerially than that by companies in developed countries, and partly because engineering service is substantially more complicated than

construction service except for valued added area.

Once the market access to developing countries is allowed to engineering and/or construction service companies in developed countries, they provide their clients in host developing countries with an advanced technology and efficient management. They are, in principle, welcomed by host developing countries. There shall be a few exceptions of national treatment such as R&D incentives only given to domestic engineering and construction service companies. The host government intends to let domestic companies catch up with their counterparts in developed countries.

4.1.2 Cases of Impediment for Construction and Engineering Services

Table 4-2 is the survey results in which Japanese engineering and construction companies encountered incidents of impediments in the past. 570 cases of incidents of impediments are reported with regards to their deals with mainly developing countries. These incidents are classified and sorted out either Market Access or National Treatment impediments or both. The biggest impediment item for Japanese companies who play their roles of advanced countries' engineering and construction service is Local Content Requirement. Since not only developing but also developed government like to foster engineering and construction industry, they require foreign counterparts to use service provided by local engineering and construction companies. The second largest impediment (limitation) is to use a local agent. This, together with number 13, i.e., Establishment of Commercial Presence is the major limitation for market access. Again the reason is the same with number 1. Namely, local government would like foreign counterparts to form a kind of joint-venture so that profit sharing, technological transfer and employment are achieved for local engineering and construction companies, too. Number 3, 4 and 5 are to develop local insurance and shipping companies. These are serious impediments for internationally competitive foreign casualty insurance and shipping companies.

Table 4-2

Cases of Impediments: Survey made

by Japan's Engineering Enhancement Association

Content of Each Impediment	Applicable for Market Access and/or National Treatment	Incidents of Impediment	Percentage (%)
1. Local Content Requirement	N.T.	77	13.5
2. Use of Local Agent	M.A.	68	11.9
3. Shipping Nationality	N.T.	68	11.9
4. Bond Issuance by Local Insurer	N.T.	67	11.8
5. Shipping Issuance by Local Insurer	N.T.	54	9.5
6. Bilateral Admission of Engineering License	M.A.	47	8.2
7. Practice of International Private Contracts	M.A.	35	6.1
8. Limitation of Labor Mobility	M.A.&N.T	34	6.0
9. Prequalification	M.A.	27	4.7
10. Price Appraisal of Competitive Bid	N.T.	21	3.9
11. Unpaid Balance & Profit Remitance	N.T.	22	3.9
12. Transparency of Procedure of Bid Appraisal	M.A.	13	2.3

Bid Appraisal			
13. Establishment of Commercial Presence	M.A.	12	2.1
14. Restriction on Procurement of Local Currency	N.T.	5	0.9
15. Technical Impediments	M.A.	5	0.9
16. Others	M.A.&N.T.	1.5	2.6
		Total 570	100.0

Note1: M.A.= Market Access, N.A.= National Treatment

Note2: Survey made in 1995

(Source : Engineering Enhancement Association Japan)

4.2.1 Japan's Schedule of Horizontal and Sector-Specific Commitments about Construction and Related Engineering Services in General Agreement on Trade in Service.

Table 4-3 shows the detailed examples of mode of service for engineering and construction industry.

Table 4-3

Detailed example of Mode of Service

by Engineering and Construction Industry

Cross-Border Supply	Bechtel Corp.(a US major Engineering Company) provides with Japanese clients basic and detailed engineering service for fee based on their engineering agreement through internet three dimensional computer telecommunication.

Consumption Abroad	Bechtel Corp. accepts on fee base Japanese engineering trainees from Japanese clients of electric utilities and let them train on the job how to deal with nuclear wastes disposals at the Bechtel built site in the USA.
Through Commercial Presence	Bechtel Corp. established their business development office 15 years ago in Tokyo for jobs from Japanese clients.
Through Presence of Natural Persons	Bechtel Corp. dispatches from the USA its speciality engineers for airport related design on cost plus fee base for New Chitose international airport expansion.

Japan's status quo on Horizontal (across the all sectors) and Sector-Specific commitments are as follows. Please refer to Table 4-4 attached.

① In Horizontal Commitments

For both limitations on market access and national treatment in conjunction with presence of natural persons, Japan's status is "Unbound". This means Japanese government maintains the present restriction on mobility of natural person. Namely Japanese government does restrict the mobility of unskilled worker to her soil. Unskilled workers for the service shall not be allowed to move to Japan. Only skilled workers such as engineers, lawyers, scientists and managers with university bachelor degree or equivalent shall be allowed to move to Japan for the services.

For limitations on national treatment in conjunction with commercial presence as well as presence of natural persons, Japan's status is "Unbound". This means Japanese government maintain the present preferable treatment with regard to research and development subsidies only for Japanese commercial presence and presence of natural persons. Namely Japanese government treat favorably Japanese companies and natural persons against foreign companies and foreign natural persons in conjunction with providing research and development subsidies.

② In Sector-Specific Commitments

For both limitations on market access and national treatment in conjunction with Cross-Border Supply Japan's status is "Unbound". The reasons is that the cross-border supply may not be envisaged "due to lack of technical feasibility". This means Japanese Government maintain her present restrictions in the cross-border supply of construction and related engineering service, reflecting the level of technology and economic development of her country and considering the difference of the quality and content of construction and related engineering service needed by consumers of her country. Particularly in Japan, construction service on building requires licensed architect approval. Professional license requirement is applicable for cross-border supply so that Japanese construction and related engineering service are protected by means of using "Kenchikushi". With regard to this license requirement, for the coming round of negotiation of GATS, bilateral approval of each license can be agreed as a compromise but it may take time to do so.

Table 4-4

The Schedule of Sector Specific Commitments:

Construction and Related Engineering Services of Japan

Modes of supply : 1) Cross-border supply 2) Consumption abroad 3) Commercial presence 4) Presence of natural persons

Sector or subsector	Limitations on market access	Limitations on national treatment	Additional commitments
3. CONSTRUCTION AND RELATED ENGINEERING SERVECES (excluding services related to mining) A. General Construction Services for Buildings (512) B. General Construction Services	1) Unbound due to lack of technical feasibility. 2) None 3) None 4) Unbound except as indicated in	1) Unbound due to lack of technical feasibility 2) None 3) None except as indicated in HORIZONTAL COMMITMENTS	

for Civil Engineering (513) C. Installation and Assembly Services (514, 516) D. Building Completion and Finishing Services (517) E. Other (511, 515, 518)	HORIZONTAL COMMITMENTS	4) Unbound except as indicated in HORIZONTAL COMMITMENTS	

4.2.2 Impact of GATS of WTO on Japanese Construction Industry Related Laws.

Along with General Agreement on Trade in Service and Government Procurement attachment negotiation of GATT Uruguay round, the US government demanded for more transparent market access and national treatment, and concurrently with price rigging incidents of Japanese public infrastructure building in which formal competitive bidding are informally distorted, Japanese government (1) revised the tendering system from selective competitive tendering to open competitive tendering, (2) introduced Bid bond, Performance Bond and Payment Bond system instead of guarantee extended by other Japanese competitors and (3) the tendering procedure are made transparent and accountable. These revision are reflected in Construction Industry Related Laws, especially "The Rules of Payment on Competitive Tender". With these revision, the market access and national treatment became legally easier and equaler than used to be.

4.3 Assessment of Degree of Non Tariff Barriers — Frequency

(Please refer Table 4-5)

There is not much of difference between Warren's and HIRAKI's in assessing NTB except HIRAKI's 0.5 given to Cross Border Supply of 3A in conjunction with limitation of Market Access because Architect (Kenchikushi) requirement is imposed on Construction for Building. Although there is no difference in assessment point given to supply through Commercial Presence of 3A in conjunction with limitation of National Treatment, actual marketing activities may be more difficult for foreign companies than Japanese ones.

With regard to degree of Non Tariff Barrier is measured by "Frequency" defined by Mr. Tom Warren, the same methodology in calculating "Frequency" is used either including or excluding conditional barrier rated Point 0.5.

	Including 0.5	Excluding 0.5
T. Warren :	100-(26/32)×100=18.7	100-(20/32)×100=37.5
S. Hiraki :	100-(25.5/32)×100=20.3	100-(19/32)×100=40.6

Japanese Non Tariff Barriers in Construction and Related Engineering Services are relatively small in Frequency, i.e. there is not much of Non Tariff Barriers in Construction Service. This is no wonder because Japanese Engineering-Procurement-Construction Companies have international competitive power due to their advanced technologies and project management capacity. Japanese construction companies (i.e. general contracters) have also international competitive power in overseas higher added value construction due to their advanced technologies and project management capacity. But in domestic construction they have indulged in lukewarm market situation when they are suffering from recession. Namely Japanese government shall increase her government budget for public construction works. And also the indigenous nature of business and endemic to particular site has made Japanese construction companies not faced with competition from abroad even though non tariff barriers is very limited. As the result, construction cost of public construction works is judged to be more expensive by 10-20% than that of advanced country. In conclusion, there is not so much NTB but there is 10-20% price difference of constructing the same kind of building excluding the land cost, between Japan and other advanced countries. What would be the reasons for? This question is analyzed in the following Chapter 4.

4.4 Price difference Between Domestic and Overseas Procurement

Construction work ordered by the private sector, for example a high rise building of which cost are broken down as follows, Material Cost: 70%, Labor Cost: 20-25%, General Administrative Cost: 5-10%.

Firstly, Material Cost such as cement, structural steel, special reinforced glass and aluminum framework for window, at the exchange rate of ¥125 per US$1, domestic supply of

cement and structural steel is cheaper than overseas supply, but special reinforced glass for window of high rise building and aluminum framework for window that are imported are cheaper by 20-30% than those of domestic supply (e.g. Aluminum framework for window (size 1.8m×1.8m) Made-In-Japan ¥26,000 per piece vs Imported (CIF) ¥20,000; e.g.2. Special Reinforced glass for window of high rise building, Made-In-Japan ¥10,000 per ㎡ vs Imported (CIF) ¥8,000 per ㎡. Along with Yen's appreciation, procurement of value added items of construction materials from overseas are becoming substantially cheeper from the view point of cost-saving, although for the reason of the indigenous nature of construction work in terms of local procurement, e.g. sand and gravels must be procured domestically. Therefore, the cost-saving resulting from overseas' procurement must be discounted and offset to the degree that domestic supply of such construction materials as sand and gravels, which are low valued items are procured domesticaly.

As for today, overseas procurement of construction materials occupies only about 1% of total procurement of construction materials among the biggest construction companies. However, in sum, cost-saving in construction materials' procurement shall be further pursued in the near future, owing to increased exposure of Japanese general constructions to international competition. They shall be accelerated if Yen will be appreciated, resulting in more procurement of construction material from overseas. The saving in construction material cost is substantial, say 10% saving means about 7% saving of total lost.

Secondly, labor unit cost is more expensive in Japan than in the USA. Say, suppose that Japan is 100 scale while the USA is measured 90, reflecting Japan's highest GNP per capita. Labor saving technology of construction such as construction robot is sought by research and development investment made by Japanese construction companies. The saving in labor cost is not very easy to accomplish. Rather than saving, it is recommendable that not to enlarge the difference in labor cost between the USA and Japan.

Thirdly, general administrative cost which occupies 5 to 10% of construction cost can be saved. Architectural standard (e.g. anti-seismologic soil-foundation requirement), prevention-of-fire standard, labor and safety standard must be strictly adhered to while excessive requirement shall be alleviated. Other social administrative cost imposed from the

viewpoint of alleviating traffic conjestion around the site, of neighborhood relationship and of buried cultural and human relics shall be minimum. Permit for construction shall be issued as promptly as possible. Costing standard for quantity surveying shall be unified across the board of kinds of public construction works. Order lot for each construction work shall be increased so that a scale merit to decrease cost shall be enjoyed and returned to the clients. Lastly but not least, for public construction work, if Design Build style with front end open tender in which basic conditions are proposed by the public sponsor shall be introduced (cf. presently, design by the public sector and the open tender and then tender winner shall build.). With these improvements the construction cost for public sector shall be reduced by about 20%. This 20% figure is feasible because the private sector's building construction is implemented on the basis of Design Build style and the private sector building is completed by about 20% cheaper in construction cost than public sector building with same specification.

In conclusion:

① By international procurement of construction materials due to (a)Yen's appreciation and (b)further service trade liberalization and (c)value engineering usage, productivity shall increase. These amount to 10% cost-down. Material cost has weight of 70%, i.e. 70×0.1=7%. 7% out of total cost can be easily reduced due to these three factors.

② (a)Labors-cost-saving-technology increases productivity and (b)saving in general administrative cost due to deregulation can also be realized. These amount to another 10% cost-down. Labor cost and general Administrative Cost has weight of 30% (25%+5%), i.e., 30×0.1=3%. 3% out of total cost can be reduced due to these two factors.

③ (a) Costing Standard in Quantity Surveying is unified.

(b) Introduction of Design and Build in which value engineering (Comparison among construction methods) is applied, 10% saving can be realized. 10%out of total cost can be reduced due to these two factors.

①+②+③ Total 20% saving out of total cost can be achieved. This can be possible over 5 years period.

In sum, 20% deduction of total cost can be derived partly from liberalization of service trade by WTO and APEC (i.e. 5% out of 20%), partly from domestic deregulation and new rules (i.e. 5% out of 20%) and partly from productivity increase by Japanese construction companies (i.e. 5% out of 20%) and partly for Yen's appreciation (i.e. 5% out of 20%). Therefore, cost difference between domestic and overseas can be equally decreased for these four reasons. Domestic deregulation, Yen's appreciation and productivity increase contribute much more to reduction of the price differential than WTO and APEC related service trade liberalization alone, since Japanese construction and engineering companies have already international competitive power. Thus there is not so much significant impact given by WTO and APEC in terms of cost reduction of construction and engineering services. At most, only one fourth of cost reduction in building and engineering expenses would attribute to the WTO and APEC related service trade liberalization in Japan.

Table 4-5
Assessment of Degree of Non Tariff Barriers

Japan's Schedule of Horizontal and Specific Commitments About Construction and Related Engineering Services (CPC 3A, 3B, 3C and 3D)		T. Warrens's Assessment				
		3A	3B	3C	3D	3A
		Construc-tion for Building	Construc-tion for Civil Work	Installa-tion and Assembly	Comple-tion and Finishing Work	Constructio for Building
Limitations of Market Access	1. Cross Border Supply e.g. Bechtel provides with Japanese clients detail design service →Unbound due to lack of technical feasibility	1.0	1.0	1.0	1.0	0.5 (Architect Require-me)
	2. Consumption Abroad e.g. Bechtel accepts Japanese trainee at its US office →None	1.0	1.0	1.0	1.0	1.0
	3. Supply Through Commercial Presence e.g. Bechtel establishes its Tokyo sales office →None	1.0	1.0	1.0	1.0	1.0
	4. Supply Through Personal Presence e.g. Bechtel's engineer participates in detailed designing of its Japanese project →Unbound except as indicated in Horizontal Commitment i.e. no admission of unskilled workers	0.5	0.5	0.5	0.5	0.5

Limitations of National Treatment	1. Cross Border Supply e.g. the above example →Unbound due to lack of technical feasibility	1.0	1.0	1.0	1.0	1.0
	2. Consumption Abroad e.g. the above example →None	1.0	1.0	1.0	1.0	1.0
	3. Supply Through Commercial Presence e.g. the above example → None except as indicated in Horizontal Commitment i.e. R&D subsidies	0.5	0.5	0.5	0.5	0.5 (Actual Marketing)
	4. Supply Through Personal Presence e.g. the above example → Unbound except as indicated in Horizontal Commitment i.e. no admission of unskilled workers	0.5	0.5	0.5	0.5	0.5