RESEARCH ON LABOR-SERVICE SUBCONTRACTING MANAGEMENT IN CHINESE CONSTRUCTION INDUSTRY

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As is known, the construction industry plays a significant role in absorbing labor force as an effective employment countermeasure in most countries. Thus the construction industry is highly dependent on its laborers and ought to seek for their benefits. It reveals the fundamentality of construction labor-service management, which has gradually been recognized as an urgent issue in China recently regarding project objectives and further the harmonious relationship between the construction industry and society.

Since the Reform and Opening-up Policy was adopted in 1978 in China, along with the institutional changes from traditional planned economy to market economy, the construction labor market has also undergone profound changes, largely due to the state-owned enterprises restructuring and implementation of Rural Land Contract System. However, the corresponding labor-service management is unsatisfactory in view of widespread labor force issues concerning occupational safety and health, project quality, labor rights infringement like payment default, etc. In this paper, two main modes of current labor-service management in Chinese construction industry are interpreted and compared. It is found that eliminating the irregular labor-service mode under the existing conditions is difficult, which blocks the development of normal labor-service management mode that is promoted in China recently. The deeper root may lie in the current overall subcontracting systems with restriction on the number of subcontracting layers. It leads to an unspecialized and undeveloped subcontracting market with incompetent and insufficient professional subcontractors or labor-service subcontractors. Another related deficiency lies in the widely adopted business evaluation system for the selection of subcontractors using the criterion of Cost-Based-Selection. Based on the experiences of Japan, some initial reflections on improving the existing construction labor-service market have been put forward aiming at an effective and long-term mechanism of construction labor-service subcontracting management under the overall subcontracting systems in China.

Key Words: *construction industrial structure, professional subcontracting, labor-service subcontracting, labor contractor, frame style construction team*

1. INTRODUCTION

The construction industry is commonly considered as a pillar industry to national economy in most countries. It makes great contributions to the society not only by providing infrastructures to support people's daily life, but also by absorbing a large amount of labor force as an effective employment countermeasure in most cases. The latter reveals that the construction industry is highly dependent on laborers and ought to seek for their benefits. Thus, much attention has been paid on construction labor force issues concerning occupational safety and health, employment relationship, labor welfare, etc.

The construction industry in China has developed rapidly during the last three decades with a number of glorious productions such as Three Gorges Project, High-Speed Railways, Urban Mass Transit, etc. However, the situation of construction laborers especially those so-called construction migrant laborers has been poor in China, in view of the phenomena such as frequent accidents with a heavy loss, widespread payment default, and long working hours, etc. As construction labor management has a

direct influence over the achievement of project objectives and further harmonious relationship between the construction industry and society, it becomes a great concern for both practitioners and researchers in China recently.

Since the Reform and Opening-up Policy was adopted in 1978 in China, along with the institutional changes from traditional planned economy to market economy, the construction labor market has also undergone two profound changes. One change is that most operational laborers were dismissed from state-owned construction enterprises into optional employment market under Labor Contract System. The other change is that a huge number of rural surplus laborers have entered the urban labor market involving in construction works. Correspondingly, construction site management has gradually been separated into two layers. One is focusing on technology and management during the whole construction process, mainly conducted by personnel from construction enterprises. The other is operational layer, including recruitment and management of operational laborers on construction site. The latter is called labor-service management in China, which gradually becomes a separated function in most large construction enterprises. Along with the expanded and more complicated construction labor market, the corresponding labor-service management remains unsatisfactory. Various construction labor force issues have appeared, revealing that construction labor-service management is problematic and thus construction laborers are suffering. It seems urgent to establish an effective mechanism of construction labor-service management in order to improve laborers' situation fundamentally, and ensure project objectives at the same time. Therefore, this paper is trying to

1) clarify the general situation of construction laborers along with the construction industrial structure readjustment regarding subcontracting systems in China;

2) interpret and compare the two modes of labor-service subcontracting management currently in China;

3) identify and analyze the existing institutional restriction on the development of construction labor-service subcontracting in China; and

4) put forward some initial reflections on improving labor-service subcontracting management under the overall subcontracting systems in China.

2. GENERAL SITUATION OF CONSTRUCTION LABORERS IN CHINA

During the last three decades, Chinese construction industry has developed rapidly which has already become one of the largest construction markets in the world. It has brought a great volume of construction activities and a boom in the number of construction laborers. This part is trying to capture a general image of Chinese construction labor market.

(1) Construction Contributions to Employment

As the third largest sector in employment according to China Statistical Yearbook, the construction industry has been making an increasing contribution to employment in China. Along with the increase of FAI (Fixed Asset Investment), the number of construction laborers also increased (Fig. 1 and Fig. 2) except a small decrease in 1998.

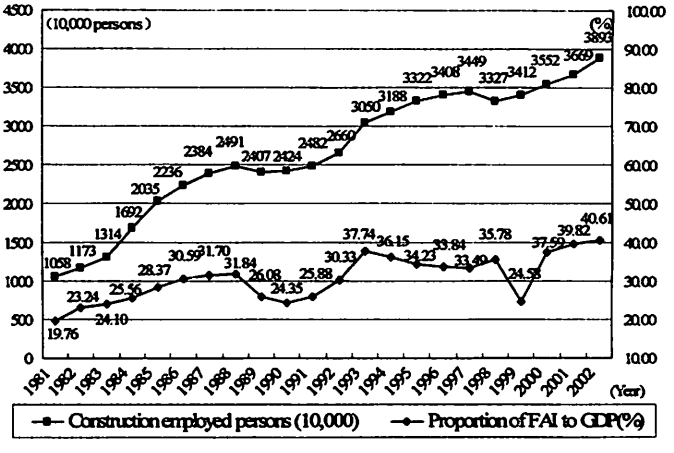

Fig.1 Status of construction employment in China (a)
Source: China Statistical Yearbook 2003~2009

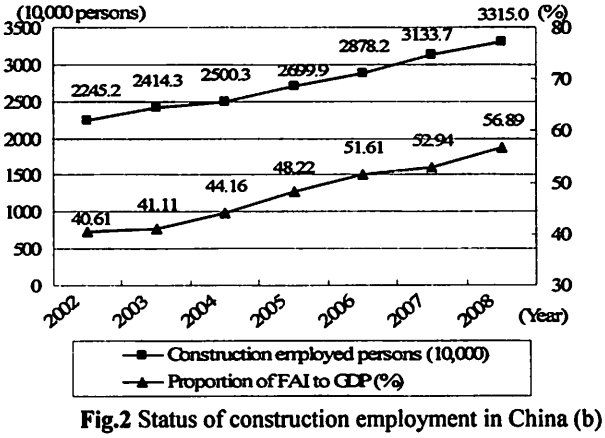

Fig.2 Status of construction employment in China (b)
Source: China Statistical Yearbook 2003~2009.

From 1981 to 2002 (Fig. 1), construction employed persons refer to all people who are engaged in social labor related to construction and get corresponding remuneration or business income. From 2002 to 2008 (Fig. 2), construction employed persons refer to people employed by construction enterprises that are with licenses of either general contracting or

professional contracting (referred as 'GCEs or PCEs' in this paper hereafter) according to the new Construction License System established in 2001. Therefore, the data since 2002 is not comparable with that of previous years.

However, according to the data from China Statistical Yearbook 2009 and the Second National Economic Census of China, the proportions of Construction Value-Added to GDP (5.7%, in 2008) and construction employment to total employment (5.3%, in 2008) remains lower than other developed countries or regions in Asia[1)] (Table 1). It indicates that Chinese construction industry still has an enormous potential to develop aiming at more contributions to national economy.

Table 1 Significance of construction to national economy

Country or Region	Proportion of Construction Value-Added to GDP (%)	Proportion of construction employment in total (%)
Japan (2000)	7.3	10.1
Korea (2000)	7.6	7.2
Singapore(2000)	7.0	5.9
Hong Kong (2000)	7.1	9.0
China (2008)	5.7	5.3

(2) Development of construction labor market

Since the Reform and Opening-up Policy in 1978, Chinese construction labor market has undergone some changes along with the institutional reform.

a) Institutional change of employment system in state-owned construction enterprises

Most large and medium sized construction enterprises in China had been state-owned establishments under the traditional planned economy system. One important aim of economic reform in China was to allow those state-owned enterprises to be more market driven. Along with the state-owned enterprise restructuring, permanent employment under Centralized Placement System was gradually substituted by optional employment under Labor Contract System. As a result, a number of construction laborers were gradually dismissed from most state-owned construction enterprises into optional employment labor market, while technical and management staff members were maintained. It subsequently led to the separation between technical and management layer and labor-service layer regarding construction management.

In other words, on the one hand, a number of construction laborers possessing construction experiences were released to construction labor market, which meant that they had to strive for their living in other ways. Some of them continue construction works mainly involved in labor-service business under new mode (interpreted in Chapter 3). On the other hand, as most large and medium sized construction enterprises have gradually focused on techniques and management, it becomes necessary for them to find capable and trustful cooperators who can provide labor-service and take charge of concrete construction work on site.

b) Boom of construction 'migrant laborers'

During the period of economic and social transformation, many peasants began to be liberated from traditional cultivation and farming works, who then rushed into urban areas and were largely absorbed by the construction industry. They generated a particular phenomenon in China called 'migrant laborers'. Migrant laborers in China refer to those who have a rural household identification according to current Household Registration System with strict urban and rural divisions, but the main income is from other sources rather than farming.

This phenomenon is mainly due to the following two institutional changes. One is the change from previous collective production and equal distribution under rural collective communes to autonomy of agricultural production by families or individuals under new Rural Land Contract System. It increased the rural labor productivity to a large extent, and then generated a surplus rural labor force. The other lies in the cancelling of some unreasonable restrictions on peasants' rights to enter the urban labor market involved in construction works.

In a word, migrant laborers have become an indispensable part of construction labor force (Fig. 3) and made a great contribution to the rapid development of Chinese construction industry[2)]. Seen from another aspect, the construction industry has played a significant role in absorbing surplus rural labor force in China, in view of the fact that approximately a quarter of total migrant laborers throughout the whole country are involved in construction works nowadays[3)].

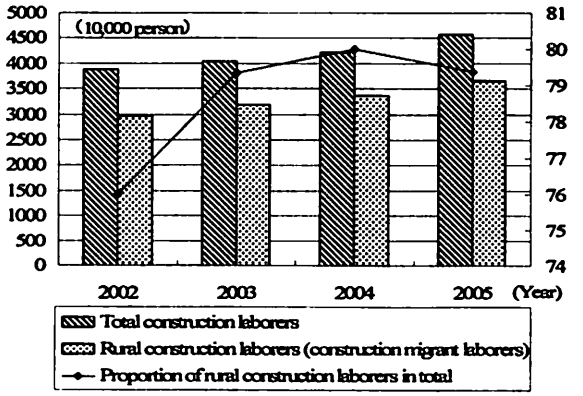

Fig.3 Contribution of rural labor force to the construction industry in China

Among those construction migrant laborers, only a few of them are employed by formal construction enterprises, while the majority of them worked on urban construction sites under informal employment by rural construction teams. Chinese construction migrant laborers are mainly categorized as follows:

Type A: Employees from town and village labor-service enterprises or other urban construction enterprises. Most of them are relatively-fixed skilled workers, which accounts for only 4%~5% among all migrant laborers in Chinese construction industry.

Type B: Rural construction team, as most widely existing form. These migrant laborers are usually recruited by so-called 'labor contractor' (see Chapter 3), and then exported to construction fields by teams. There is no guarantee for construction migrant laborers in any legal form.

Type C: A few scattered laborers who try to find jobs individually.

In recent years, construction migrant laborers have become a grave concern for the society as many problems arose. Take construction accidents for example, their low-level performance had been severely blamed as one of the main reasons for safety and quality problems on construction sites. However, it should be considered more seriously that it is usually them who suffer most from construction accidents. Their living conditions had also been extremely poor for a long time, with widespread payment delay or default, and extremely excessive working hours[4]. Several countermeasures have been taken with resort to compulsion by administration, however with unsatisfactory effects. From a long-term view, perhaps it is more valuable to regulate employment behaviors of labor-service traders in order to ensure migrant laborers' legal rights more effectively.

(3) Labor-service business within the overall construction subcontracting systems in China

From above, it could be noticed that construction labor-service has gradually been separated from previous construction businesses, and formed as a new business. Along with the overall construction industrial structure readjustment in China, the status of this newly developed business has been clarified and confirmed in the whole construction market.

a) New Construction License System

Since institutional reform in the construction industry started in the 1980s, China has gradually introduced Tenders and Bids System into construction projects. Under this system, a general contractor usually estimates the total cost for building a project and places a bid or estimate on the entire project. In turn, construction subcontractors offer bids for their services and are hired by the general contractor based on those bids and their professional reputation. This system is universally adopted in most construction projects in China now, in which a number of laborers, artisans and professionals are supposed to complete the specific tasks that they specialize in as subcontractors. As a result, relationship between general contractor and subcontractor tends to become a critical element to assure a smooth process of construction projects. Concerning subcontracting businesses, there are two categories currently in China according to Construction License System established since 2005. One is professional subcontracting, and the other is labor-service subcontracting.

General Contracting (GC): General contracting in China previously was only regarding business of construction. Nowadays, in order to be consistent with the global market, large and middle sized construction enterprises are being encouraged to develop their integrated capabilities for Engineering, Procurement and Construction (EPC) contract. Correspondingly, super-level license of general contracting was added to Chinese Construction License System in 2007.

Professional contracting (PC): A construction professional contractor is only permitted to subcontract with general contractor or client to finish the permitted professional engineering work within a construction project. According to new Construction License System, there are 60 kinds of professional engineering work. The general contractor and professional contractor ought to have a joint and several responsibilities on the subcontract project.

Labor-service contracting (LC): It has not been put forward formally until new Construction License System was established in 2001. According to current Construction Law of the People's Republic of China and related regulations, a labor-service subcontractor can only make a contract with general contractor or professional contractor in relevant labor-service business rather than engineering.

b) Contracting relations under current Tenders and Bids System in China

In China, subcontract of engineering works again is strictly forbidden according to current laws on Tenders and Bids. The legal contracting relations under legal Tenders and Bids systems are shown in Fig. 4, from which it can be noticed that labor-service contracting is the most fundamental layer.

As a newly separated business from conventional construction businesses in China, labor-service subcontracting has not developed well yet. Thus, numerous problems closely related this business has arisen in practice, such as frequent construction

accidents due to insufficient capabilities of labor-service subcontractors, jerry building leading to poor quality of projects, infringement of migrant laborers' rights under illegal acts of labor-service business, etc. Considering its indispensable and fundamental function on the implementation of construction site management, labor-service subcontracting management should be stressed and regulated regarding project objectives.

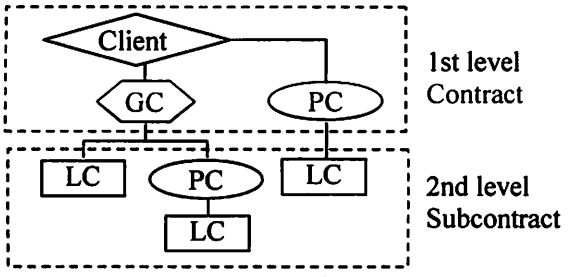

Fig.4 Legal contracting relations in Chinese construction market

3. DEVELOPMENT OF LABOR-SERVICE SUBCONTRACTING MANAGEMENT AND RELATED PROBLEMS

On a basis of characteristics of construction migrant laborers, two main modes of labor-service subcontracting management and relevant problems will be interpreted and analyzed in this chapter.

(1) General characteristics of labor-service group on construction site

a) Large number

There is usually a quite huge requirement for laborers on construction site especially in the infrastructure projects. For example, in bidding sector 2 and sector 3 of civil engineering works of Beijing-Shanghai high-speed railway project, the numbers of construction laborers on site once reached a peak of approximately 18,000 and 29,000, respectively. And nearly 80% of them were migrant laborers. Managing such a large number of laborers is a big challenge itself.

b) High disparity

Generally speaking, as laborers recruited in construction project usually come from different parts of China, they have significant differences in customs and living habits. It can easily result in communication difficulties and even conflicts, which are inconsistent with the concentrated construction management. During the investigation of one project conducted by China Railway 12th Bureau Group Co., Ltd, a staff member from the company said that as construction laborers on site were usually from various provinces (16 provinces in this case), the distinctive dialects made it difficult to convey instructions and get feedback clearly. What is even worse is that sometimes laborers had conflicts with each other due to localism. Thus most staff members from the company were unwilling to communicate with the field laborers, and even discriminated them.

c) Seasonality

Over a long period in the traditional agricultural society in China, most peasants possessed nothing except bound to farmlands, so they had a strong feeling on farmlands. Even when Chinese peasants strived to move to urban areas pursuing for a higher-quality life, they could not cut down the relationship with their farmlands. In addition, as the urban areas have not yet fully opened to the peasants (largely due to Household Registration System), admission of them in urban areas is extremely difficult. What mentioned above results in the phenomenon of migrant laborers returning to rural hometown, especially in the harvest season and traditional festivals, regardless of how long, crowded, and expensive it will take them to back home. It is likely to lead to high risk of labor shortage and project delay during construction process.

d) Low quality of service

Most construction migrant laborers are poorly educated. Even worse, most of them just left their hoes for entering the construction sites without any vocational training or construction experiences. They could not meet the skill requirements of large-scale construction. In 2002, the number of construction migrant laborers was around 29.59 million, of whom only 2.5% have been formally trained and certified. Even including those who have received short-term training, the percentage would not be more than 8%. It makes it extremely difficult to conduct labor-service management in practice. In addition, lack of skilled laborers has been found as a key factor affecting construction safety on site[5]. As a result, it seems necessary to speed up skill training among migrant laborers so as to be adapted to scaled and centralized construction.

e) Lack of the conception of overall project performance

There exists a so-called small-peasant-mentality among most migrant laborers, with the main characteristics as distinctive individualism and the only concern of income. Lack of consciousness of overall project performance especially regarding quality and safety makes it extremely difficult to implement management among them.

The features mentioned above make labor-service management of construction projects more difficult.

(2) Labor-service subcontracting management by

labor-service teams (LSTs)

a) Emergence

Due to the particularities of construction production as regionality and intermittency, most construction enterprises prefer labor-service outsourcing under flexible labor relations to retention of fieldworkers under formal employment. Then with a huge number of construction migrant laborers rushed into urban areas, labor-service team (LST) emerged as required. It developed in a large scale in the late 1980s, and has being occupied the main position involving in labor-service business and further labor-service management on site.

b) Features

In this mode, the team leader is called 'labor contractor' (*baogongtou* in Chinese). Only a few of labor contractors worked in construction enterprises before, but separated from the enterprises owing to enterprises restructuring, while most of them have not any construction experiences at all. They usually play an active role in recruiting migrant laborers mainly from their relatives, fellow-villagers, or other sources involved, and then take charge of the recruited laborers' living and working. For migrant laborers, they can get approach to jobs through LSTs despite high risks of being infringed on their legal rights. For contract-issuing party, firstly LST can speed up the organizing process of fieldworkers by virtue of existing interpersonal networks; secondly, it can save troubles through limiting demands and reducing dissatisfaction from migrant laborers by virtue of labor contractors' interpersonal relationship.

c) Phenomena

It is indisputable that LST had played a positive role in meeting the urgent requirements of construction laborers and thus made an essential contribution to the boom of Chinese construction industry. However, deficiencies of this mode have gradually been revealed in view of some universal phenomena recently.

Phenomenon 1: Infringement on legal rights of migrant laborers

Generally speaking, as LST is usually a temporal organization which can be easily influenced by variable factors as project location, project duration, season, etc., the team members do not have any guarantee of jobs or welfares. Moreover, since management of LST relies on social relationship rather than any legal contract, laborers' rights can be easily infringed by arbitrary team leaders. Take labor wage payment for example. Concerning the frequent cases of unreasonable delay or deduction of labor payment recently, which have aroused great concern from the government and society in China, it is labor contractors that have been found as the culprit in most cases. That is one of the triggers for the Chinese government to prohibit LSTs rigidly since 2005.

Phenomenon 2: Safety and quality problems on construction site

As most migrant laborers and even 'labor contractors' do not have sufficient construction experiences, capabilities, or responsibilities, project safety and quality are commonly under high risks. It has been found to be a main cause of frequent accidents and quality problems recently.

d) Prohibition

In view of the severe issues related to this mode, the Chinese government tried to put an end of LSTs in three years from 2005 to 2008[6]. However, contrast to strict prohibition in principle, this mode continues to exist widely in practice, sometimes with 'tricks' to escape from the administrative punishment. The reasons that it is hard to abolish LSTs in practice will be analyzed in Chapter 4.

(3) Labor-service enterprises (LSEs) and corresponding labor-service management mode as Frame Style Construction Team (FSCT)

Labor-service subcontracting is a new business separated from conventional construction businesses. Largely owing to LSTs, construction labor-service subcontracting market remains disordered, and not only migrant laborers but construction enterprises suffer a lot as well. In order to ensure the implementation of project quality and safety management, prevent migrant laborers from being defaulted by labor contractors, and furthermore establish a lasting effective mechanism to stimulate construction laborers, labor-service enterprises (LSEs) have been promoted vigorously in China nowadays.

a) Emergence of LSEs

According to Construction Law and *Views on establishing labor-service enterprises and improving labor-service subcontracting systems* issued by the Ministry of Construction (renamed as the Ministry of Housing and Urban-Rural Development of the People's Republic of China since 2008), it is required rigidly that all construction enterprises should only invite bids of labor-service from LSEs who have a required license of labor-service subcontracting business since the end of June, 2008. Most construction labor-service enterprises came into being under this background.

b) Features of LSEs

Organizing and managing of LSTs are more like individual behavior constrained by morals rather than laws or regulations, while construction LSEs

are legal persons which belong to a category of labor dispatchment enterprises. It indicates that they must comply with relevant laws or regulations.

For example, LSEs must sign an employment contract with laborers and take charge of personnel recruitment and training, routine management, remuneration payment, and various insurances payment etc. according to current Company Law.

Different from general labor dispatchment enterprises, LSEs should comply with Construction Law simultaneously, with characteristics as follows. First, they must obtain labor-service subcontracting license only from relevant construction department. Second, it is only permitted for them to provide labor-service for construction enterprises, and only in the form of labor-service contracting, with incoming charged from construction GCEs or PCEs in the form of management fee.

c) Development of LSEs

Since 2001, the numbers of construction LSEs (Table 2) and employed persons of LSEs (Fig. 5) have been gradually increasing in China. However, it also should be noticed that even in 2008, the total number of GCEs or PCEs goes up to 62,074, but the number of LSEs is just 4,357, 6.6% in all; the number of employed persons of LSEs is only 5.7% of that of GCEs or PCEs. It reveals that current development of LSEs is far from enough to meet the practical demand in Chinese construction market. From another perspective, it indicates that most labor-service on construction site, like concrete, steel reinforcement, plastering, etc. have still been in the charge of numerous LSTs. LSTs continue to occupy an overwhelming position in the labor-service subcontracting market in practice, which blocks the development of LSEs to a large extent. The deeper reasons will be analyzed in Chapter 4.

d) Corresponding Frame Style Construction Team (FSCT) in railway projects[7-8]

Along with emergence and development of LSEs, a new labor-service management mode called Frame Style Construction Team (FSCT) has recently been promoted. FSCT is a primary fieldwork construction team, which builds a bridge between contract-issuing enterprise and LSE. The organizing process by contract-issuing enterprise is demonstrated in Fig. 6, and the specific organizational structure is shown in Fig. 7 which is composed of two layers. One layer is fieldwork management and supervision, conducted by managing, technical and operational personnel from contract-issuing enterprise. The other layer is fieldwork operation, conducted by laborers who should be dispatched from LSE, or some special engineering laborers employed by contract-issuing party directly. This mode spread widely after guideline of this mode was issued by Ministry of Railway in 2008[9] considering the following merits.

Table 2 Development of construction LSEs

Year	GCEs or PCEs	LSEs	Proportion of LSEs to GCEs or PCEs (%)
2002	47852	1193	2.49
2003	48688	2021	4.15
2004	59018	3104	5.26
2005	58750	3101	5.28
2006	60166	3748	6.23
2007	62074	4357	7.02
2008	71095	6837	9.62

Source: China Statistical Yearbook (2003~2009).

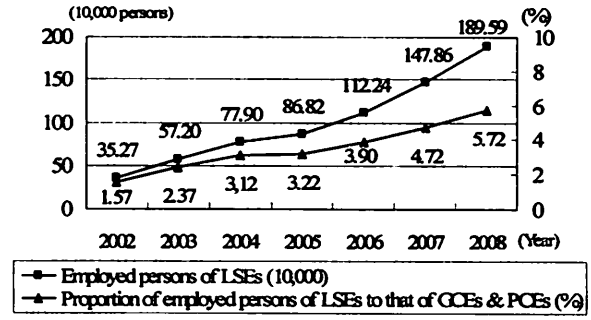

Fig.5 Development of employment of construction LSEs
Source: China Statistical Yearbook (2003~2009).

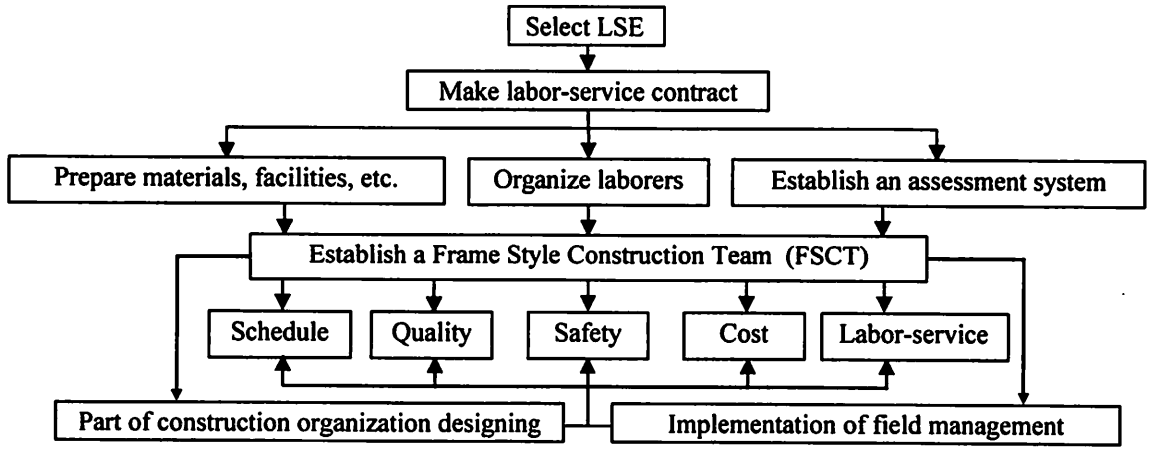

Fig.6 Organizing process of FSCT by contract-issuing enterprise

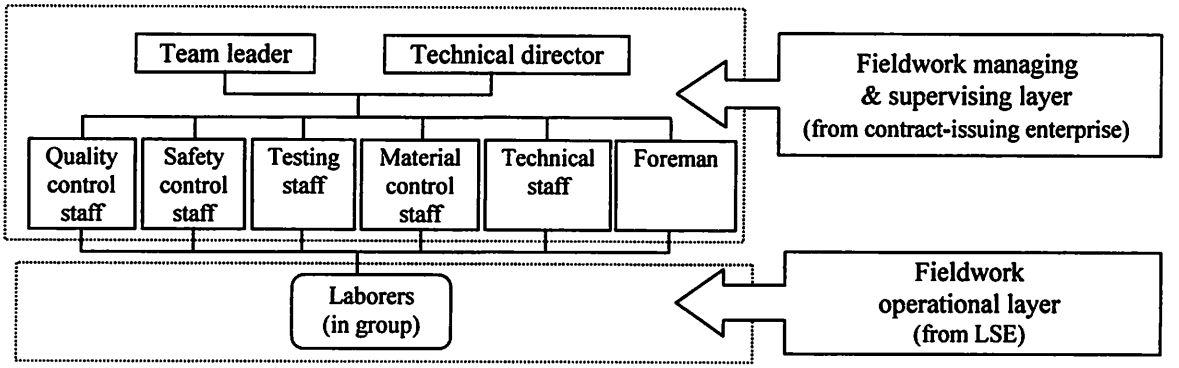

Fig.7 Organizational structure of FSCT

For migrant laborers, under the new mode, contract-issuing enterprises must sign a labor-service contract with every migrant laborers dispatched from LSE. According to the contract, migrant laborers' wages should be calculated and paid by contract-issuing party instead by LSE. The new wage system can lower the risk of payment deduction or default which has been frequently done by 'labor contractor' under LST mode for a long period.

For contract-issuing enterprises, they have been bothered with the problem of jerry-building by dishonest 'labor contractor' for a long period. Under the previous LST mode, procurement of materials and labor is usually in the charge of 'labor contractors'. Sometimes they cheat on labor or materials, like defaulting laborers' wages, using inferior materials for building, etc. Contract-issuing enterprises have been seriously blamed because of insufficient management on site especially when safety and quality problems emerge.

Under the new mode of FSCT, contract-issuing enterprises can assure the implementation of quality and safety management systems on site more concretely through direct intervention on material management and fieldwork supervision (Fig. 7). In another word, this new mode can lower the subcontracting risk concerning quality and safety by the integration of management from contract-issuing enterprise and operation laborers from LSE.

Concerning the motivation of promoting this new mode among railway construction projects, it has a significant meaning on protecting the legal rights of migrant laborers and assuring the project objectives such as safety, quality, schedule, etc. in a more effective way, compared with the conventional mode of LST. That is why it is promoted widely in Chinese railway projects by government currently.

However, as LSEs have not yet developed in a large scale to meet the needs of rapid construction development, the implementation of labor-service management mode of FSCT seems constrained and developed far from expectation.

4. ANALYSIS OF RESTRICTIONS ON DEVELOPMENT OF LABOR-SERVICE SUBCONTRACTING MARKET

Current labor-service subcontracting market in China, which is in the second level of overall construction production systems, remains to be confused and disordered with irregular labor-service organizations. In this chapter, several restrictions on its development will be demonstrated.

(1) Disadvantages of LSEs in the market-share competition

a) Competition with LSTs

As pointed by one staff member from China Railway Corporation (contract-issuing party), in practice they could not or would not like to follow the regulation of selecting LSE instead of LST concerning labor-service management. One reason is that there are not enough and capable LSEs in current subcontracting market as mentioned before (Table 3). Another reason lies in the Cost-Based Selection (CBS) of contractors, which is widely adopted particularly in the subcontracting market. Generally speaking, as labor cost occupies a considerable percentage in total project cost, tenderer with lower labor cost is more favorable in the bidding under CBS. Compared with other irregular labor-service organizations such as LSTs, LSEs should have a higher labor cost in view of related taxes payment, management expenditure, and responsibility risks, while LSTs do not have to consider. It reveals that as there is no sound business evaluation system yet in current subcontracting market, LSEs are usually exposed to a vitally disadvantageous position in the competition of labor-service business. That may explain the dumping that LSEs depress the labor cost to an unreasonable extent just in order to get the job and maintain the basic operation. In return, it is likely to bring about problems concerning project quality,

safety, labor issues, etc., and block the development of LSEs in the long run.

In a word, LSEs have no superiority in current market competition over other irregular labor-service organizations. Thus, most LSTs would not like to transform themselves into LSEs. Even LSEs would find a job privately under the status of LST rather than LSE. Moreover, most LSEs are compelled to bid at an unreasonably low price, resulting in an extremely slow development of LSEs, much far from expectation. It is urgent for the government to identify and analyze the deeper reasons behind those phenomena and then establish long-term schemes to regulate the labor-service subcontracting market in practice instead of absolute prohibition in principle.

b) Competition with GCEs with low-grade license and subcontractors 'anchored' to GCEs

In addition to LSEs and LSTs, general contractors or professional contractors sometimes also engaged in labor-service business in spite of prohibition. In some regions of China, it is even locally permitted for them to possess the license of labor-service subcontracting business. It is one reason that illegal subcontracting still exists widespread against laws.

The illegal subcontracting in China is mainly in three forms according to current Construction Law and Tenders and bids Law: 1) wholly subcontracting, which refers to the act of subcontracting the whole contracted project or all of dismembered engineering works within the contracted project to another contractors, instead of fulfilling their responsibilities based on contract; 2) partly subcontracting again, which refers to subcontracting any engineering works to uncertified subcontractors, or without permission from client, or subcontracting the main structural engineering works to another contractor; 3) sub-subcontracting, referring to subcontracting the construction works more than one time.

Firstly, for those low-grade GCEs who are less competitive in bidding the whole project, there is a considerable probability for them to get engineering works illegally from general contractors under the disguise of labor-service subcontracting with a license of labor-service subcontracting business; in return general contractors can gain a considerable profit without any construction work, regardless of the risks of project quality, safety, lawsuits, etc. As a result, numerous low-grade GCEs survive through this way instead of being eliminated in the market selection or competition.

Secondly, there arise a number of unincorporated entities that possess a certain operating fund or trade channels but without required licenses. They sometimes 'anchor' themselves to a certain general contractor under the name of labor-service business subcontracting, through which the general contractor appear to be legal to complete the main structural engineering works by those anchored entities, and gain a considerable profit without any effort; in return, those entities can 'borrow' the general contractor's license in order to tender for the contract of other project just submitting a certain fee.

In this situation, the risks of safety, quality, lawsuits, etc, are usually high considering the incompetence of those entities and vague responsibilities of involved parties. Regarding LSEs, compared with low-grade GCEs, they seem less competitive in professional skills or economic strength, while compared with those entities anchored to GCEs, they seem to have less relationship with GCEs which is extremely important to get market share in China. It can be concluded that LSEs almost have no way to survive and develop under the existing conditions. That may explain why it is unrealistic to expect those low-grade GCEs or entities to transform into LSEs automatically under current market.

c) Competition with unqualified LSEs

In order to speed up the development of LSEs, some short-term countermeasures have been taken by administration. Take LSE license requirements for example. In some regions of China, registration limitation on capital has been decreased, and even the skill certification rate of laborers has been loosened to a large extent. Furthermore, examining and approving procedures of LSEs application have been simplified and delegated to lower level of administrative sectors. All above is trying to encourage LSE to develop fast. However, it provides a chance for those incompetent LSEs to enter the market, which can easily result in the quality uncertainty of LSEs (sellers), since the subcontracting market remains to be under asymmetric information for labor-service demanders (buyers). It suggests that establishment of information system and public transaction platform is essential to labor-service subcontracting systems.

(2) Institutional deficiencies on current labor-service subcontracting market

Since labor-service subcontracting business is newly developed business and becomes paralleled with professional subcontracting business in China recently, the existing laws have not yet specific regulations on it. The legal status and future of LSEs seem very vague in current construction systems in China. Situation perhaps is much worse if taking consideration on strict restriction on subcontracting layers according to current Tenders and Bids System. It constrains the specialization of construction

industrial structure and the long-term development of middle and small sized construction enterprises to a certain extent.

Seen from the case of Japan, multi-layer subcontracting systems (MLSS) have been adopted widespread, and subcontracting of the labor-service business only is forbidden in Japan. Under MLSS, an interdependent construction market has been developed, composed by a small number of top class general contractors who have overwhelming advantages in technology and management, and multiples of competent professional contractors who have superior operational skills and proprietary construction technology. In 1999, the proportion of professional contractors in Japan was already more than 70%[1]. Compared with Japan, China has almost an equal number of general contracting enterprises and professional contracting enterprises, and it seems hard to change (Table 3).

Table 3 Development of professional contracting enterprises

Year	GCEs	PCEs	LSEs	GCEs or PCEs	Proportion of PCEs (%)
2002	33652	30999	1193	47852	63.21
2003	29359	19329	2021	48688	38.12
2004	-	-	3104	59018	-
2005	32389	26361	3101	58750	42.62
2006	33175	26991	3748	60166	42.23
2007	34071	28003	4357	62074	42.15
2008	38212	32883	6837	71095	42.19

Source: China Statistical Yearbook (2003~2009).

Seen from the development process of construction industry in most developed countries, along with the growth of general contractors who will gradually develop their capabilities for undertaking EPC or DB projects, concrete engineering works are usually subcontracted or sub-subcontracted to professional contractors that are in small-scale but with highly specialized construction skills or technologies[10]. Professional contractors then act as a key party in the overall construction production systems. It indicates that LSEs in China nowadays may be a middle offspring during the transition period that is supposed to be substituted by PCEs. Thus, only when LSEs develop their professional skills that they could sustain in the construction industry in the long run.

However, according to current Construction Law and Tenders and Bids Law of the People's Republic of China, there is a restriction on the number of layers of subcontracting engineering works within the project in consideration of the risks of quality, safety and responsibility prevarication, etc. Although it may be valuable for stressing on the definite responsibilities of general contractor to client, and subcontractor to general contractor, it has in return minimized or constrained the subcontracting market, since the amount of subcontracting work becomes limited. It seems hard for middle and small sized construction enterprises (mostly PCEs and LSEs) to get the job from the market for development.

In a word, partly due to the current subcontracting systems, the relevant subcontracting market is lowly specialized, in which PCEs even have not sufficient space to develop, needless to say the newly born LSEs only with labor-service business. The Chinese government has made some efforts by administration forces, such as setting restriction in the Construction License System that general contractors and professional contractors are not allowed to deal with labor-service business as a sideline, while LSEs can not apply for the license of general contracting or professional contracting adversely. One of the motivations is to encourage the development of LSEs and further labor-service subcontracting market. Perhaps it may have some effects on regulating the labor-service subcontracting market temporarily. However, without fundamental changes in the overall subcontracting market, the construction industry can not achieve a sound industrial structure, in which all categories of construction enterprises can develop well in the long run.

(3) Insufficient supply with qualified laborers

The shortage of skilled laborers has already become a bottle neck to the development of LSEs. According to new Construction License System, LSEs are required to have a 100% certification rate of operational workers on post. However, the rate of skill certification among operational laborers remains extremely low, as an effective professional skill training and education system involving migrant laborers has not established yet. It should be considered as soon as possible from a long-term view of the development of subcontracting market[11], which demands a cooperation of all involved parties.

5. CONCLUSIONS

Two modes of current labor-service subcontracting management in Chinese construction industry have been compared and analyzed. It is found that eliminating the irregular labor-service mode under the existing conditions is difficult, which blocks the development of normal labor-service management mode that is promoted recently in China. As the labor-service subcontracting market remains to be disordered, most construction migrant laborers on

site still have a tough time. From the detailed analysis in the previous chapter, it could be noticed that the status quos of construction labor-service market may deeply root in the overall subcontracting systems. Based on an interview in the Japan CTI Engineering Co., Ltd. in 2010, some initial reflections on improving the present labor-service subcontracting market have been put forward aiming at an effective and long-term construction labor-service subcontracting management in China.

(1) Necessity of reform on current construction subcontracting systems
---Seen from Japanese MLSS

One deficiency of current subcontracting systems lies in its restriction on subcontracting layers in principle, although it commonly does not work in practice. It led to an unspecialized and undeveloped subcontracting market with incompetent and insufficient professional subcontractors and labor-service subcontractors.

From the development of Japanese construction multi-layer subcontracting systems (MLSS), it can be found that labor-service subcontractors have effectively been encouraged to develop themselves into professional contractors under growing economy, in view of unconfined business scope including material procurement. Further, most of them could then develop their specialized skills or technologies as a competitive power. By possessing materials, proprietary technologies, labor force and facilities, most subcontractors in Japan can provide independently not only professional technical proposal but integrated management as well, who then become competent and reliable partners to general contractors. What is needed to highlight here is that they have developed their own independent safety and quality management systems, which is extremely important to construction management on site. As an indispensable part of the overall Construction occupational safety and health Management System, subcontractors have made a great contribution to the outstanding achievement of construction safety management in Japan.

In a word, one prominent characteristic of Japanese construction subcontracting systems could be described as an integration of several top class general contractors and multiples of highly specialized professional subcontractors with independent capabilities. Such kind of professional subcontractors should be the long-term development objective for Chinese LSEs, even current PCEs and low-qualified general contractors as well. Only in a highly-specialized subcontracting market with promising subcontractors, construction management on site including labor-service management could be improved to ensure construction migrant laborers a better life lastingly.

However, regarding MLSS, the actual condition of China is different from that of Japan. As pointed by Mr. Yoshihito SABASE, Director from Japan CTI Engineering Co., Ltd., efforts should firstly be made based on its own practical national conditions and characteristics, which will then act as the criterion to evaluate the introduced systems from other countries. That is to say, judgment and evaluation of other countries' systems should be cautiously conducted before introduction, which reveals that Japanese MLSS should be penetrated and combined with Chinese situation before introduced into China. It is certain to be a difficult, time-consuming job.

(2) Promotion of partnering in support of the tentative changes in subcontracting systems
---Seen from Japanese Cooperation Committee[12)]

There was an unyielding convention in the past of Japanese construction industry that each subcontractor was exclusive to a fixed general contractor without providing other contractors with service[13)]. Japanese contractors believed that complying with this convention may affect their short-term income but could bring long-term profits. Many large general contractors had developed their own Cooperation Committee for their exclusive use. Here, the Cooperation Committee is a particular organization with a number of stable subcontractors as members. Instead of emphasizing on price competition or bidding among the subcontractors, the mode of Cooperation Committee promotes a more tempered and stable interdependence between a certain general contractor and its Cooperation Committee members as subcontractors. Cooperation Committee mode has been proved to be valuable and effective in assuring project objectives and developing subcontractors' capabilities by continuous assistance and training conducted by general contractors. In return it has brought a success for general contractors themselves. By virtue of Cooperation Committee mode, a stable and favorable partnering between general contractor and subcontractors was realized in Japan under developing economy, which guaranteed the good performance of MLSS in the past of Japanese construction industry. However, as there has not yet any similar organization or mechanism in China, the relationship between general contractor and subcontractors is generally temporal and unstable, which results in a distrustful environment and further leads to a deterioration of project quality and safety. Cooperation Committee mode seems worth learning

in view of its outstanding group strength in meeting the mutual fundamental demands for both general contractor and subcontractor. However, it should be noticed that how to select capable committee members is extremely important, which demands a sound business evaluation system. In Japan, it is partly ensured by social trust, credit and integrity. Recently, the integrity mechanism is promoted among construction enterprises in China, which indicates that such kind of organization may be available in the near future in China as well.

(3) Establishment of a new business evaluation system to regulate the subcontracting market

Another deficiency of the overall construction subcontracting systems lies in the widely-adopted business evaluation system for the service selection using the criterion of Cost-Based-Selection. The harm and restriction of CBS on the development of LSEs in China have already been demonstrated in Chapter 4. The reform of evaluation system must be done thoroughly from the top layer (client and general contractor) to the bottom layer (general contractor and subcontractor). Without the changes in the top layer, it would be extremely hard to change the business evaluation system in the bottom layer.

Japanese contractors stayed in the long-term relationship in the past, largely due to the previous Japanese public works systems with characteristics of so-called 'assurance systems' [14]. The designated competitive bidding scheme and Dango were the two important components of the assurance systems, although Dango is severely blamed in most countries. Regarding the selection of contractors, Qualification-Based-Selection (QBS) was developed because public owners lacked procurement tools for services for which price competition made no sense. However, owing to Dango, the transparency of QBS was doubted, which is then being replaced by Comprehensive Evaluation Scheme nowadays in Japan. Maybe it is also necessary for China to establish such an evaluation system from now on, aiming at a more fair and sustainable market for construction enterprises. However, merely taking a look at the extremely strong human relationship here and there in China, it is certain to be a tough job.

(4) Establishment of professional training and education system

Considering the poor situation of professional training and education currently in China, the administration (central and local) should make big efforts on the establishment of professional training and education systems thoroughly among not only LSEs (involving migrant laborers), but GCEs and PCEs as well, from the view of Mr. Yoshihito SABASE from CTI. Actually, it should be the most basic action to ensure the implementation of any improvement by a provision of sufficient and capable construction laborers.

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