

Reinforcement of Safety Awareness Training to Construction Workers in Subcontracted Enterprises

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Abstract

The construction safety problems have become one of the issues people are most concerned about for a long time. Construction workers are the direct participants of the construction. Therefore, knowledge, skills and comprehensive quality of workers will exert direct impact on construction quality. This paper is based on the present situation of domestic construction accidents frequently taking place in China, combined with official data of more than 10 years from State Statistics Bureau. It gives the main details of and analyses the construction safety awareness issues of construction workers in subcontracted enterprises in China. And it focuses on three aspects of the reason why workers have inferior safety quality in construction. Targeted measures have been proposed in order to solve the problem, which is aimed at improving the safety awareness of construction workers in subcontracted enterprises and it is also of great significance to guarantee the project quality.

Keywords: construction; subcontracted enterprises; construction workers; safety awareness; training

1. Introduction

For the past few years, China has invested much more for the constructional engineering industry as the construction industry is becoming one of the pillar industries of the national economy in China. With the scale of the construction continuing to expand, the number of people involved in all stages and directions keeps growing, and there is a rapid expansion in the number of construction practitioners, among them are mostly peasant workers (or rural migrant workers). Division of specialization has become one of the characteristics of the construction industry. Subjected to constraints, such as funds, time, personnel and technical levels, general contractors are often unable to complete all the works or tasks of building, it is the common practice that the general contractor distributes some of the amount of work relating to the professional division component project or labor jobs to some other specialized construction companies to work together to complete the prospective construction goals.

As the construction industry is defined as a labor-intensive industry, its rapid development not only makes more job opportunities available to wide grassroots construction workers, but also puts forward a stricter standard for construction workers' quality (including ethical quality as well as technical ability). Construction quality directly affects whether or not the whole of completion functions or results can be correctly given full play to. Quality of the project has become the important aspect of fierce competition between construction enterprises. And the quality of construction workers plays a direct and fundamental role in engineering quality in construction. Therefore, the security work is essential for construction enterprises. How to reduce the incidence of construction accidents and safeguard the life safety of construction workers is still a serious problem today demanding prompt solution in the China's construction industry.

2. Current problems

As shown in Table 1 and Figure 1, there are the totals of the number of accidents and deaths in the national construction industry in China from 2000 to 2013. According to the safety accidents of housing construction and municipal engineering in the country announced by Ministry of Housing and Urban-Rural Development of the PRC (MOHURD), from January to November 2013, in China there were in total 477 safety accidents of housing construction and municipal engineering, which caused 617 deaths, the numbers of accidents and deaths increased by 28 and 46 compared with those happened in 2012, rising by 6.24 per cent and 8.06 per cent respectively.

Formwork collapses and hoisting machinery accidents have become the larger or even the largest dangerous sources of accidents occurring in housing municipal engineering field. In some areas, accidents have frequently occurred, and larger accidents have happened somewhere and somewhat. What's worse, there are even some construction enterprises that have experienced two or more production safety accidents on construction over the first nine months in 2013. At the same time, in 2013, the phenomenon with late-reported safety accidents was prevalent. So far from January to October, 430 accidents occurring up to China, with 76 of accidents late-reported more than 20 days, which accounted for 18% of total accidents.

Safety accidents lead to so many construction workers' deaths every year, most of them are rural migrant workers from villages. This necessarily calls for the requirement that with the safety training education strengthened their safety awareness and the ability to protect themselves can be enhanced, and the security incidents which do harm to migrant workers who are main vulnerable groups can be reduced.

3. Analyses of the Causes of Safety Accidents

3.1 The Less Safety Training Subcontracted Enterprises Offer Construction Workers

First of all, the objective factors are that farmer workers have greater mobility, for example, a construction company spends so much money, time and other costs on construction personnel training, the result may be likely to some disappointment that construction workers might go to other construction worksites in the middle or after completion of projects and, therefore, subcontracted enterprises don't want to do training on the safety quality of their workers.

Secondly, the subjective factors are greatly affected by the safety management in construction subcontracted enterprises, which are one-sided in pursuit of the schedule and capital investment in construction, while the investment in safety and quality of construction workers is too little to make sense, and the training on workers needs to take a lot of time, affecting the profitability of the subcontracted enterprises. Last but not least, the most important reason is that national construction supervision system has been so far not very sound for training of safety awareness. Most of the subcontracting enterprises cope with the security checks in the way of making fake in order to get away with it, which may resulting in the poor safety awareness of construction workers, low skills of production, lack of ability to protect themselves, and more dangerous security incidents have usually occurred .

3.2 Lack of Relative Safety Awareness Construction Workers Need

With the gradual mature of the market economic system, a large number of rural and non-construction industrial workers come to enter the construction worksites in various forms. In the current subcontracting enterprises, some 80% workers are rural migrant workers, whose quality are not above the average or direct to say, are somehow low, so are the theoretical knowledge and skills. Some of them who are just doing some masonry have come to construction worksites without having received professional training on the job, which they are not familiar with. They are very lack of the knowledge of safety construction, and they even do not understand the basic construction specifications, let alone ensure the quality and safety of the project. Some workers do not have long-term experience in construction work, which lead to less familiar with the construction environment. At the same time, the workers have no sense of the dangers of safety accidents. Most of them have a serious lack of security quality and safety consciousness, and their self-protection awareness is very weak.

3.3 The Weak Safety Awareness of Subcontracted Enterprises

An important reason that safety accidents of construction take place frequently lies in that subcontracting companies are lack of the full notion of the safety construction, and they fail to put the safety production into the construction of development planning and strategy of enterprises, which directly threaten the safety of construction workers and the quality of the completed project.

Some subcontracting companies lack the qualification of professional construction. They may be subordinate to undertake the business, and even start the construction arbitrarily without obtaining construction permits. Some construction enterprises do not have a strong part of the consciousness of safety in production responsibility, and their safety consciousness is strong weak, with one-sided pursuit of construction schedule. They prefer to lay emphasis upon effectiveness rather than on security of construction, ignoring the work of safety with a serious shortage of investment in safety production. The education of security training is a mere formality, which means they failed to address the important role of security in enterprise development, and the responsibility system has not distracted to a specific worker. It failed to establish a real and efficient operation of safety assurance system. Otherwise, the behavior of infringement may often take place.

Some construction organizations, including some construction project that the government invests on, fail to pay attention to and carry out the security responsibilities under the related legislation. And relevant laws could not be put in proper place, some subcontracted enterprises cut down the construction schedule without reasonable reasons. They also overlook the hidden hazard, and cannot timely handle accordingly.

4. Solutions to Safety Accidents

4.1 Establish a System to Train Workers and an Access System to the Rural Migrant Workers

Training on construction workers is a wide-ranging and far-reaching system project. More preparation may quicken the speed in doing work. The investment that subcontracting enterprises put in security training is far smaller than the losses the accident cost. Enterprises should form a comprehensive training system from top to bottom and set up an authoritative professional training institution, also seriously take the personnel training into consideration. When they make the long-term, systematic safety education and training plans, construction enterprises must first determine their security goals and targets, purposes of the training and the results to be achieved, in order to ensure the efficient functioning of safety education and training system. At the same time, quality training on construction workers should develop diverse forms of training and targeted training content in relation to their age, educational and technical level. Training system should be designed to conform to the trend of the times and to reflect characteristics of construction industry, as well as to reflect the latest industry achievements. What's more, training system should highlight the personality and the actual needs of workers with practical and easily operation, which fully embodies the timeliness and pertinence of the training system. In addition, industry authorities and local governments also need to take advantage of industry management to actively provide policy support.

4.2 Enhance the Comprehensive Quality of Construction Workers

It mainly reflects in three aspects: theoretical knowledge and skill levels, work ethics and safety awareness. Theoretical knowledge and skill levels of construction workers directly reflects their overall quality and also directly relates to the quality of projects, in particular to the construction of professional engineering with technologically complex operation, much difficulty, high accuracy requirements and new technologies. Modern science and technology have been developing in a rapid way. With the help of the new scientific and technology development, a variety of new technologies, materials and equipments one after another apply in the construction engineering field. If the knowledge and skills cannot be updated, it will not be able to do the construction work well. Construction enterprises specializing in subcontracting must carry out the targeted safety training and must be equipped with safety production knowledge, professional skills and management capacity on professional engineering construction. Those who are mainly responsible for the safety production management should be trained and approved by the relevant competent departments in order to be qualified with and achieve qualification. Workers with special operations must be specially trained and approved by the relevant authorities for the safe operation, and start to go to work after obtaining the certificate of special qualification certificates. Strengthen training for construction workers, and for the personnel who participate in construction, must conduct safety technical education, making them familiar and complying with relative type of work and safety technical operation regulation. Only in this way can it be improved the overall skill level to ensure the quality of construction.

For the cultivation of work ethics, on the one hand, construction workers should have a highly enough sense of responsibility and sufficiently high quality awareness. If not to do so, it is unlikely to do any work. On the other hand, construction workers should have a strong spirit of bearing hardship, due to all work in the construction process of one engineering project with features such as dirty, bitter, exhausting and dangerous.

Construction day and night sometimes may be at the risk of working under freezing winter days or broiling days in summer. Without the most basic spirits, there is no way to do the construction work well. In addition, they should also have sufficient consciousness and organization discipline. All construction work should be obedience to a superior unified organization, management and scheduling. The number of managers at construction worksite was relatively small. There usually are only one or two managers commanding and controlling construction at a construction worksite with hundreds of workers. Therefore, each construction workers should have sufficient consciousness of controlling themselves, no matter whether the leaders are at worksite or not, and no matter whether it is during daytime or at night, no matter how hard the work is, in order to guarantee the schedule of works and its quality.

For the training on safety awareness, on the one hand, construction workers should have the awareness of engineering and structural safety. The other hand, they should have personal security awareness, to achieve this, they should do the following three things: firstly, don't do anything to hurt others. Secondly, workers should avoid been hurt by others, and last, do not do something harmful yourselves. Construction works with the complex environment, are dirty, bitter, not just tired, even more dangerous. There may be a risk of landslides when digging deep foundation. Working at high places may run the risk of getting hurt or even dying. Construction on cable may be likely to cause the electric shock hazard. Security incidents can take place when workers are inattentive. Therefore, construction workers must strengthen their safety awareness and make sure the safety precautions, in order to ensure the smooth progress of the construction schedule.

4.3 Enhance Departmental Safety Supervision

It is the law that powerfully safeguards the safety management in construction. China should establish and improve the training monitoring system of the safety awareness of construction workers. Safety supervision departments should take full advantage of sectoral advantages and better communicate with other departments in order to establish a truly effective functioning safety guarantee system. For specific projects, relative departments should cooperate with other related sectors like construction observation to carry out safety supervision at construction worksites. For the construction worksite with security breaches, it needs to enhance the safety precautions and take security measures to protect construction workers' safety of lives and property in order to keep security incidents nipped in the bud.

Governments should actively cooperate with other appropriate supervision departments to formulate relevant policies. Supervision departments need to supervise at worksites and to give some advice of related training to the security training work for construction enterprises. Also, supervision departments should avoid the education of security training becoming a mere formality and hazards of misleading construction workers. At the same time, regular on-site safety inspections are needed and grass-roots activities should be often organized. They also need to exchange and share knowledge of work safety with construction workers. What's more, supervision departments should set up a course of lectures on safety education, which construction managers and construction workers should take active part in. Through analysis and research on safety accidents, experiences and lessons are learned from them, and it is also need to respond quickly to accidents and properly handle it correctly. Construction enterprises should be in accordance with the provisions in the construction formalities before they started construction, which is not only responsible for the quality of engineering, but also is responsible for the safety of construction workers.

5. Conclusion

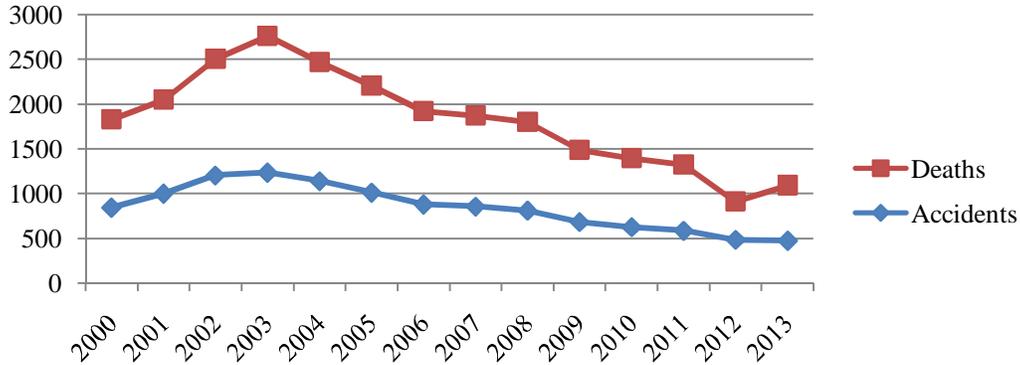
The scientific outlook on development has proposed the idea with people oriented, and also put the person's status in an outstanding position of production and development. The continuous development of the construction industry is not only a severe challenge for the construction technology skills, but also an enormous hard work for building the construction team. This has resulted in that the current skills and quality of construction workers cannot meet the demand of construction enterprises in China. In order to reduce the rate of construction accidents, we must strengthen safety training for construction workers, safety education and training as one of the radical policy. Construction workers in construction worksite are the main perpetrators of the accident, but also they are the victims, which dues to the main reason that they are equipped with lower safety quality.

The corresponding solutions that will improve safety awareness and skills of construction workers, protect their life safety, and also reduce construction safety risk are not only the responsibility of construction enterprises, but also the direction and target that all levels of governments, the construction sector and safety supervision departments struggle to fulfill.

Table 1:

Years	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
accidents	846	1004	1208	1238	1144	1015	882	859	814	684	627	589	487	477
deaths	987	1045	1296	1524	1324	1193	1041	1012	989	802	772	738	426	617

Figure 1:



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