

## Research on the Compensation Standard of Work Slowdown of Personnel in the Construction Claim

Zhongtao Zou<sup>1</sup>, Hong Ke<sup>2</sup>

<sup>1,2</sup>School of Management, Tianjin University of Technology, Tianjin, China

<sup>1</sup>1529102614@qq.com

**Keywords:** Construction claims, Work slowdown of personnel, Compensation standard

**Abstract.** Research on the topic that the compensation of work slowdown of personnel fee is not clear in construction claims. Firstly, recognizing idleness events and summing up the necessary conditions for the compensation of work slowdown of personnel fee. Secondly, the work slowdown of personnel is defined as worker idle and work efficiency reduced of two cases. Lastly, according on the methods of claims, the paper determined standards of work slowdown of personnel fee compensation in two cases in order to provide reference for the engineering practice.

### Introduction

Because construction project has such characteristics as the long construction period, the complexity and variability of construction condition and many indefinite element, work slowdown of personnel caused by non-contractors is widespread<sup>[1-3]</sup>. After the idleness events occur, cost compensation is the most concern of contractor. However, at present, the uniform compensation standard of idleness has not been compensated in China. If employer and contractor don't make a detailed agreement on the cost of compensation in the contract, the cost of the compensation process is difficult to reach an agreement, easy to dispute. Therefore, the compensation standard of idleness has become the focus of employer and contractor.

In the current study, most researchers only analyzed the necessity of compensation of worker idleness<sup>[4,5]</sup>. Although some researchers put forward a few methods to solve compensation issue<sup>[6-8]</sup>, the methods are in different ways and no uniform standards. Therefore, the paper will combine the existing research to discuss the issue of compensation standard of works idleness in order to provide reference for the engineering practice.

### Recognizing events of worker idleness

The construction project is affected by complex internal and external environment, participation in diversification and limited foresight of employer and contractor, so the idleness events show diversity. It is very important for obtaining compensation of work slowdown of personnel to recognize idleness events accurately. Based on this, the paper will combine literature<sup>[9,10]</sup> and Construction Contract (2013) to generalize the events which cause idleness, as shown in table 1.

According to the analysis of Table 1, many kinds of events caused by the slowdown in the construction process. The reason can be summarized as the causes of the employer, the contractor, the third party concerned with the construction of the project, and the factors that can't be controlled. Accordingly, the employer and the contractor may determine attribution of responsibility of slowdown events in order to propose a more rational slowdown compensation.

Table 1 idleness events

Table 1. Delays Events			
Responsible party	Categories		Including
responsibility of employer or employer's representative	responsibility of employer or employer's representative		the employer delay providing drawings, or provide mistake drawings
			the employer delay providing construction site, construction condition and basic data
			progress payments and advance payments are delayed
			the employer delay providing materials and equipment
			the instruction of employer is delayed, suspended construction
delay caused by the contractor	improper management、 poor organization and coordination、 the plan is not complete		construction organization is poor,
			the number of machinery and equipment can't meet the construction needs or mechanical failure
			start time delay, labor shortage
			weak technology power, management level is low
delay caused by third party	third party concerned with the contractor		project delay caused by subcontractor or supplier
	third party related to employer	subcontractors, supplier	project delay caused by the subcontractor and material suppliers appointed by the employer
		designer	design drawings was changed many times in the construction process
		supervision engineer	supervision engineer delay in issuing drawings and instructions
			the supervision engineer require to make a test of the non-specified in the contract.
			the supervision engineer does not provide written data in time
	delay caused by non-controllable factors	unpredictable obstacles	
uncertainty obstacles		adverse material conditions	
force majeure		natural disasters such as earthquake, debris flow, tornado, flash floods and so on	
unusually severe weather conditions		infrequent torrential rain	
special social conditions.		war, rebellion, strike, coup and other unstable environment	

### The definition of compensation conditions of worker idleness

There are a lot of events that lead to the slowdown, but contractor can't obtain compensation of idleness for all events. For this reason, it is necessary to define the compensation conditions. This paper will define the compensation conditions from the following two aspects.

**Contractor's direct economic losses caused by the idleness.** According to the concept of labor claims and relevant law regulations, the nature of the claim of idleness is only a kind of economic compensation, rather than a punishment. In addition to, between loss result caused by the slowdown events and employer's behavior don't necessarily exist legal cause. So if this event doesn't cause contractor's direct economic losses, Contractor can't carry out cost claims for this event.

**Idleness events caused by non-Contractor.** According to the above analysis, there are four categories of causes of idleness, but the contractor may submit an claim application to the employer only if idleness events are due to the employer fails to perform or fails to fulfill contractual obligations and there is a risk event that the employer should bear in accordance with the contract. It is not difficult to find that the specific events include the event caused by the employer or the employer's representative, third party related to the employer, unpredictable obstacles, uncertainty obstacles combined with the above analysis.

## Establish the compensation standard of worker idleness

The work slowdown of personnel refers to personnel can't be engaged in the job and is in idle state, or workers are arranged to other positions but there is loss efficiency because the surrounding environment and work content are relatively unfamiliar. Based on the above description, the paper defines work slowdown of personnel as idle personnel and loss efficiency in two cases.

**Research on the standard of compensation caused by idle personnel.** Compensation of cost caused by idle personnel is in line with the general form of the labor cost calculation, that is quantity multiply by the unit price. Therefore, the most important work is to determine the amount of labor and labor cost in this case.

The number of slowdown of personnel can be gotten by staff statistical or site visa, so it usually does not cause employer and contractor in dispute. But the determination of the unit price has been the focus of attention for employer and contractor, it is very difficult to make the employer and contractor reach a consensus if the price is too high or too low. To this end, this paper will be combined with the existing research to determine unit price in compensation caused by idle personnel.

(1)The method which labor price is determined comparative analysis. This paper makes comparative analysis for the method which labor price is determined after researching a large amount of literatures in order to determine the optimal method, specific contents are shown in Table 2.

Table 2 the method which labor price is determined comparative analysis

Content Name	Principle	Advantage	Disadvantage	Applicable scope
standard method for minimum labor wages	to protect the basic livelihood of workers	it is easy to obtain minimum labor wages; exercisable	in reality the difference is big between minimum labor wages and actual labor; low in accuracy	the quantity of idle staff is determined easily;
cost method	only counting part of the cost of the contractor actual expenditure	conform the principle of claim; high accuracy	the calculation of relevant welfare costs is cumbersome; poor operability	related welfare cost are easy to determine
the method of labor price coefficient	welfare cost is deducted from labor price according to a certain proportion	conform the principle of claim; high accuracy	it is difficult to determine proportion	proportion is determined in contract or other documents
the method of labor price	employer pay compensation according to tender offer	it doesn't determine labor price again ; low in accuracy	it is contrary to the principle of claim	the quantity of idle staff is determined easily

Through the comparison of Table 2, we can know that all kinds of methods have their characteristics and applicable scope, and their scientific nature, accuracy and operability are also different. Therefore, this paper will establish compensation standard of work slowdown of personnel according to the above analysis.

**The determination of compensation standard caused by idle personnel.** According to the above analysis, Standard method for minimum labor wages and the method of labor Price are relatively easy to use in the determination of labor Price.

But the labor price which is determined as Standard method for minimum labor wages is lower than labor price in the contract .So it is difficult to reach an agreement if the labor price is determined as Standard method for minimum labor wages. The method of labor Price is contrary to the principle of claim in accordance with the actual occurrence of the claim. The cost method and the method of labor price coefficient conform the principle of claim in accordance with the actual occurrence of the claim. However, the cost method needs to determine the construction allowance,

processing allowance and other welfare cost one by one so it is more complex and need to invest a lot of manpower and material resources. In comparison, it is easy for the employer and contractor to estimate the proportion of welfare expenses according to the practical experience of the project. Although there is little difference between the estimated value and the true value, the method of labor price coefficient is consistent with the principle of compensation and has strong operability.

Based on the above analysis, this paper believes that the cost which is determined base on the method of labor price coefficient as the standard of compensation is more in line with the requirements .

**Research on the standard of compensation caused by loss efficiency.** (1)Survey of the calculation method of cost compensation caused by loss efficiency. It has the essential difference between cost compensation caused by loss efficiency and cost compensation caused by idle personnel. In this case, the traditional method of quantity multiply price is no longer fit, so it is necessary to construct a standard to determine the cost compensation caused by loss efficiency. At present, there are two ways to calculate the cost compensation caused by loss efficiency, one is the average productivity index method, the other is the engineering quantity ratio method.

1)Average productivity index method. The steps for the average productivity index method is as follows. Firstly, find the average productivity index under normal construction conditions, that is, the total cost of a certain amount of work divided by the labor wage, as shown in formula 1.

$$R = C_{\text{initial}} / P_{\text{normal}} \quad (1)$$

Secondly, calculate the average productivity wage by average productivity index under the influence of idleness, that is, the progress payments divided by the average productivity index ,as shown in formula 2.

$$P_{\text{idleness}} = C_{\text{idleness}} / R \quad (2)$$

In formula,  $P_{\text{idleness}}$  means average productivity wage under the influence of idleness;  $C_{\text{idleness}}$  means progress payments under idle conditions.

Finally, the average wage in the impact minus the average wage in normal circumstances, and the difference means the contractor should receive compensation cost.

$$P_{\text{Compensation}} = P_{\text{idleness}} - P_{\text{normal}} \quad (3)$$

In formula,  $P_{\text{Compensation}}$  means the compensation obtained by constructor

2) the engineering quantity ratio method. The specific thinking of the method is as follows. First of all, determine the amount of work which a worker can complete in one day under normal conditions and the amount of work which a worker can complete in one day under the condition of loss efficiency. Secondly, the amount of work which a worker can complete in one day under the condition of loss efficiency divided by the amount of work which a worker can complete in one day under normal conditions in order to obtain engineering quantity ratio. Finally, the cost of completing the work divided by engineering quantity ratio to obtain the value of the actual payment, and the value of the actual payment minus the value in contract is worth the compensation.

**The determination of compensation standard caused by loss efficiency.** The calculation of engineering quantity ratio method is relatively simple, but the engineering quantity ratio is calculated from the point of view of the whole of the work. This thinking is not scientific, because the loss efficiency caused by the idleness appears only in the initial stage of a job. The average productivity index method calculates compensation according to the progress payments at the beginning of the project ,so calculation result is more accurate. Thus, this paper believes that the cost which is determined base on the method of labor Price Coefficient as the standard of compensation is more in line with the requirements.

## Conclusion

This paper researches on the topic that the compensation of work slowdown of personnel fee is not clear in construction claims ,and build the method of labor Price Coefficient in order to determine compensation standard caused by idle personnel and average productivity index method so as to determine compensation standard caused by loss efficiency. But the paper only consider the

single factor of idleness when build method caused by loss efficiency, not for other factors Therefore, calculation method of fee needs to be further down when many factors lead to loss efficiency.

## References

- [1] W. Du. Research on the Calculation Method of Compensation of Hydropower Project. Water Conservancy and Hydropower Construction Cost, 2001(01):32-34.
- [2] Q.X. Li. The Composition and Calculation of the Claim Caused by Delay in the Construction of International Projects. Project Management Technology, 2009,7(11):61-63.
- [3] Y.G. Feng, W. Jiang. Research on Compensation of Personnel and Equipment Idleness. Sichuan Water Power, 2012,31(03):56-58.
- [4] F. Tan, B. Zhou. Research on Multi Resources Equilibrium Optimization of Engineering Projects based on Resource Scheduling. Project Management Technology, 2013,11(2):39-43.
- [5] Y. Chen. Analysis of Claims in an International Project and Apply in Xiaolangdi Project. Nanjing: Hohai University, 2006.
- [6] L. Yan, Y.L. Yin. Engineering Practice. Beijing: Science Publishing Company, 2010.
- [7] J.X. Zhao. A Study of Issue on the Determination of Cost Claimed in Accordance with the Bill of Quantities. Tianjin: Tianjin University of Technology, 2012.
- [8] W.Q. Ye. Discuss on Several Common Problems of Claim Caused by Construction Period Delay. Zhejiang Hydrotechnics, 2011(4):55-57.
- [9] J. Feng. The Research of Cost Claims by the Contractor of Applications in Construction Delays. Wu Han: Wuhan University of Technology, 2012.
- [10] M.F. Li. Power Engineering Project Period Delay Claim Research-To the PetrolChina Company power station project as an example. Guangxi: Guangxi University, 2013.