

Research on Adjustment in Contract Sum Caused by Missing of Preliminaries in BQ for Tendering

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Keywords: BQ for tendering; Missing of preliminaries ; Responsibility of risk; Adjustment conditions; Adjustment method

Abstract. There is a focus that controversy often appears between both sides of employers and contractors in BQ for tendering during construction. Aim at the problem of adjustment of the missing in BQ for tendering, this paper elaborate from two aspects, including the reason and adjustment method. Through analyzing the reasons to divide responsibility of risk on the basis of *Code of bills of quantities and valuation for construction works (GB50500-2013)*. Based on the above analysis, defining the adjustment conditions of the missing in BQ for tendering .In terms of adjustment method, divide preliminaries into three categories. It will provide the theory evidence for both sides of employers and contractors to adjust the agreement during construction.

Introduction

Construction projects usually adopt the bills of quantities (BQ for short) for valuation , bidders need to press the tender sum of the project respectively based on the list of work sections and trades and the list of preliminaries, however employers forbid the adjustment of the sum of preliminaries ,these measures cause many controversies[1]. Code of bills of quantities and valuation for construction works(GB 50500-2013) summary since 2003 more than 10 years of experience, refining the risk and the measure for it, making sure that employers take part in sharing responsibility for the risk in the adjustment of the sum of preliminaries , limiting the risk of adjustment and clearing the measures for it, strengthen employers' responsibility for adjustment of the sum of preliminaries, working out the conditions that the lack of basis for adjustment to some extent[2] .Even so, the adjustment of contract sum caused by the missing of preliminaries in BQ for tendering is also a difficult problem.

View of this , this paper will go deep into analysize the responsible for the risk of missing of preliminaries in BQ for tendering , clear and definite the conditions and method of the adjustment of the contract sum caused by the missing of preliminaries in BQ for tendering.

Recognizing the risk factors in the missing of preliminaries in BQ for tendering

The nature of the missing of preliminaries in BQ for tendering is that the potential risks transform to be actuality. Therefore, the missing of preliminaries in BQ for tendering can cause the adjustment of contract sum, its premise is how to define the responsibility of risk[3] So it is necessary to search for the reason for the missing of preliminaries in BQ for tendering and recognize the risk factors.

Some scholars support that the reason for the missing of preliminaries in BQ for tendering is only exist in the stage of bidding[4] , including the defect in the drawing up of BQ for tendering and the

date supplied by employer is not accuracy. But in practice, there are also some interference factors linked with the missing of preliminaries in BQ for tendering .For instance, the change of designing and disadvantageous material conditions all can cause the missing of preliminaries in BQ for tendering.

Although substantial changes exist in the construction phase of the bidding program construction plan and construction phases caused by contractors can cause the missing of preliminaries in BQ for tendering, but because the risk responsibility belongs to the contractor, the adjustment of contract price is unaccepted, only when changes exist in the construction phase of the bidding program construction plan and construction phases caused by tenders, the sum of contract is likely to be adjusted.

So this article take advantages of flash chart to research for the reasons.Taking into account of the viewpoint and engineering practice to summary the reasons which cause the missing of preliminaries in BQ for tendering, then recognize the risk factor about the missing of preliminaries in BQ for tendering.The flash chart is as shown in Figure 1.

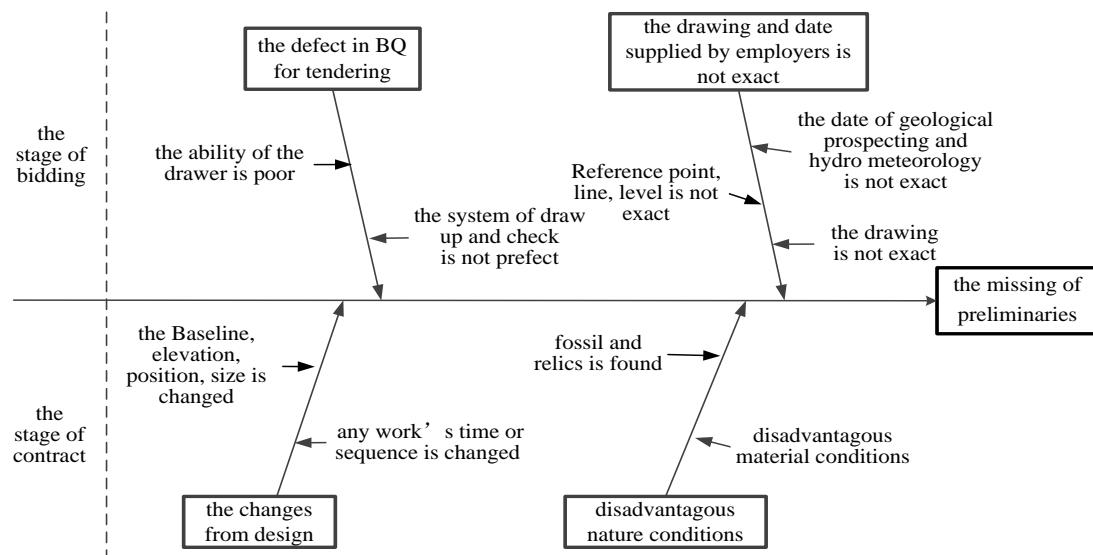


Figure 1. The analysis of reason (except constructors') for the missing of preliminaries

Figure 1 shows that the reasons for the missing of preliminaries are broadly divided into four categories: the missing of preliminaries in BQ for tendering, advantageous material condition , construction and technical issues, the date provided by employers is not exact. Risk factors included in these four reasons are: the ability of the drawer is poor (R1); the system of draw up and check is not perfect (R2); Reference point, line, level is not exact (R3); the date of geological prospecting and hydro meteorology is not exact (R4); the drawing is not exact (R5); the Baseline, elevation, position, size is changed (R6); any work's time or sequence of engineering is changed (R7); fossil and relics is found (R8); disadvantageous material conditions (R9).

Dividing the responsibility for the missing of preliminaries in BQ for tendering

The contract terms of the Construction Standard the Tender Document published in 2007 largely draws from FIDIC Conditions of Contract for Construction published in 1999 ,the relevant provisions of the General Terms is more biased in favor of the risk that the contract price will be adjusted reasonable and sharing of risk issues risk allocation is more clear [5]. Code of bills of quantities and valuation for construction works (GB 505010-2013) is devoted to the 14 specific content of the contract price adjustment, the adjustment is to introduce the idea of risk-sharing

scheme, establishes the principle of the division of responsibilities hair contracting parties of the risks, such as risk-adjusted measures for projects, etc., clear that the owner should be involved in the process of risk-sharing measures for the project[6]. The Construction Standard the Tender Document published in the 2007and Code of bills of quantities and valuation for construction works (GB50500-2013) are complementary to each other and constraints, more in line with the project needs and the settlement stage.

Based on this, with The Construction Standard the Tender Document published in 2007 and Code of bills of quantities and valuation for construction works (GB50500-2013) as the basis for the division of responsibilities risk of the identified risk factors attributable risk, the responsibility is divided into letting employers undertake all responsibility, letting contractors undertake all responsibility, and distribute the responsibility based on specific condition. The conclusion is shown in Table 1.

Table 1. The responsible for the risk of the missing of preliminaries

Number	Risk matters	Risk factors	Bearers
1	The defect in BQ for tendering	The ability of the drawer is poor (R1)	Employers
		The system of draw up and check is not perfect (R2)	
2	The drawings and date provided by employers are not exact	Any work's time or sequence of engineering is changed (R7)	Based on specific condition
		Fossil and relics is found (R8)	
		Disadvantageous material conditions (R9)	
3	The changes from designing	The drawing is not exact (R5)	Employers
		the Baseline, elevation, position, size is changed (R6)	
4	Disadvantageous nature conditions	Reference point, line, level is not exact (R3)	Employers
		The date of geological prospecting and hydro meteorology is not exact (R4)	

The adjustment method of the missing of preliminaries in BQ for tendering

Preliminaries which was accordance with the different pricing of the project are divided into three categories: The first category preliminaries is calculated in accordance with the project all-in unit rate, the second category preliminaries the total price of the project is based on a lump sum or a given coefficient calculation, the third category is health, safety and environmental construction preliminaries project. Calculated by the price action items and the total value (or coefficient) measures the project are likely to occur under the influence of the missing of preliminaries interfering factors, which may cause changes in health,safety and environmental provisions calculation base.

The adjustment of the missing of preliminaries calculated by unit price

Preliminaries calculated by unit price are quantifiable preliminaries which attached to and inextricably linked to some work sections and trades. Preliminaries calculated by the price are given the appropriate measurement standards in Code of bills of quantities and valuation for construction works(GB50500-2013). so when the measures identified project costs can be adjusted, the adjustment should be factual, engineering preliminaries costs should follow the national measurement specification , all-in unit rate should be in accordance with the "applicable", "similar" and "non-applicable or similar" principle adjustments.

Note that when using the "applicable" principle, it need to determine the amount of change in the magnitude of changes to the project's engineering and change the amount of pre-engineering, if the change amount of increase or decrease of more than 15%, all-in unit rate in the "applicable" items can be adjusted.

When "no applicable or similar" principle was adopted, then all-in unit rate needs to be recalculated, quote floating rate should be considered at the same time.

The adjustment for the missing of preliminaries calculated by total price

Preliminaries calculated by total price were immeasurable, so total price should be responsible for a task until it was completed or coefficient was adopted.

The missing of preliminaries calculated by lump sum were usually adjusted general factual. But at the same time, contractors' floating rate should be considered. Calculate formula is as follows:

The cost of preliminaries after adjusted

$$= \text{The cost of preliminaries in BQ} \pm (\text{The cost of added preliminaries} \times \text{Contractors' floating rate}) \quad (1)$$

The adjustment of health , safety and environment provisions

Whether the adjustment of health , safety and environment provisions is reasonable direct affect the level of construction site. Though Code of bills of quantities and valuation for construction works stipulate it can't be compete which means health safety and environment provisions will not be missing, however, it doesn't mean it can't be adjusted.

The formula of calculate health ,safety and environment provisions is as follows:

$$\text{Health,safety and environmental provisions} = \text{Calculation Base} \times \text{Rate} \quad (2)$$

However, health ,safety and environment provisions is based on the characteristic of all specially engineering, so the rate will not be changed by the missing of preliminaries in BQ for tendering. But when construction meet variation order or discrepancy in BQ quantity, the content of health, safety and environment provisions will be affected, then the calculation base will be changed.

Conclusions

The missing of preliminaries in BQ for tendering is a focus between employers and contractors, Code of bills of quantities and valuation for construction work establishes the principle of the division of responsibilities hair contracting parties of the risks,require contractors bear the risk of the adjustment of the missing of preliminaries.Only when the risk is caused by employers , the cost of preliminaries is allowed to be adjusted. When employers and contractors are sign the contract , the responsible for the risk and the principle of the adjustment should be clear.

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