

The Application of Cost Control in Construction Engineering

Xudi Chen ^a, Jieying Luo

School of Civil Engineering and Architecture, Southwest Petroleum University, Chengdu 610500, China

^a1364999718@qq.com

Abstract

With the rapid development of construction enterprises in our country, the increasing competition in construction market, prevent the waste of resources, the application of cost control in construction engineering is particularly important. This paper puts forward the basic order of construction project cost control; it can be divided into advance control, elaborates the matter controls, afterwards controls three stages, on ways to reduce the construction cost, and puts forward the main method in the cost control in construction engineering.

Keywords

Cost control, project management, the construction project

1. Introduction

The project cost control level is a comprehensive indicator to measure the construction enterprises' management level, the construction enterprises of all economic activities should be based on the cost. Using the cost, that one of the comprehensive indexes, through calculating and adjusting in a planned way, then it can reflect and supervision the cost, making the production cost down to the lowest limit, achieving the best economic benefit, promoting enterprise reduce consumption continuously, increasing earnings, improving project profit. Due to building project construction management is a one-off act, it is only a project management object, and it will end up with the completion of the project. During the construction period, if the project cost can be reduced, or have the economic benefit, it concerns the gain and loss, there is a big risk. For the construction of the project cost control, the key lies in the formation process of project construction cost, in the supervision and guidance for the production cost of manpower, material or expenses, and to adjustment, restriction, timely and correct the deviation to what will happen and have happened, making the various production cost control within the scope of the project cost, to ensure to achieve cost control target.

2. The Sequence of the Construction Project Cost Control

According to the time sequence, the construction project cost control can be divided into: advance control, in-process control and post-action control.

2.1 Advance Control

In advance of the construction project cost control, refers to the project before start working, affecting the project cost of economic activity conducted by the prior planning, auditing and supervision, this is the beginning of the cost control. Including cost forecast, cost decision-making, cost planning, etc.

The Cost Prediction

Cost prediction is the first step of advance control, it is the basis of cost decision-making and preparation of cost plan, it provides scientific basis for choose the best cost solution. It mainly includes the following two aspects bidding decision-making and the cost prediction:

Firstly, when the enterprise is choosing bidding projects, the first thing is forecasting its costs; determine the cost value, as the basis of whether the bidding contracting decisions;

Secondly, before the planning cost prediction. Cost prediction methods is varied, generally speaking, there are qualitative analysis and quantitative analysis.

Participate in the Decision-making

Participation in decision-making is that, the PM according to the cost information intends to analysis and comparison of the construction activities for economic benefits, and then participates in the choice of the optimal solution. When PM participation in the decision-making, he should have a global view, not only pay attention to the micro-economic benefits, but also pay attention to the macroscopic economic benefit.

Authorized Strength the Cost Plan

After PM determines the optimal solution, it is time to authorized strength the cost plan. It is the goal and basis of cost control. In order to control the cost better, it also should resolve the relevant economic indicators in the cost plan, , the implementation of the class to each department construction headquarters or personal, implementing centralized hierarchical management.

2.2 In-Process Control

The in-process control of construction cost is to form the overall process control engineering cost, also called in-process control. In-process control, it belongs to the second stage of cost control. At this stage, the cost manager needs to strictly in accordance with the cost plan and the rate of consumption, to review of all construction costs regularly, let the waste may lead to loss ,destroy and ready to use cost accounting information analysis, deviate from the goal difference, timely feedback to the duty unit and individual, in order to take effective measures in time, correct the deviation, make the cost control within the predetermined target. the content of the in-process control, mainly including the following aspects:

Expenses Control

The control of expenses, on the one hand, it must t control spending as planned, control from the amount strictly, never be breakthrough arbitrarily. On the other hand, it should check all spending is up to specification.

Artificial Cost Control

Artificial cost control mainly control capacity and utilization rate of norm, attendance, working hours, labor productivity, and so on and so forth, timely discover and solve the problem of work stoppage or work slowdown, etc.

Labor Material Control

The labor material control, it mainly controls the construction machinery, production equipment and the rational use of transport, to improve the utilization ratio and carry out repair and maintenance strictly.

Material Cost Control

On the material cost, it must control from material purchase, storage and acceptance, recipients, rejected material mainly, strict the procedure system, implement the quota acquisition, strengthen construction site management, discover and solve the procurement's unreasonable, no formalities, material waste, field chaos lost and waste problems timely.

2.3 Post-Action Control

Post-action control also means feedback control, it mainly analyzes the implementation of the work, and compare with the control standard, discover problems, analyze the causes of problems and it possible impacts in the future, to take effective measures and specific implementation in time, in order to prevent problems from happening again.

The post-action analysis of cost control, generally with the following procedures:

First, through the link of cost accounting, mastering the practical engineering cost;

Second, compare the project actual cost with the standard cost; calculate the cost difference; determine the amount of cost save or waste;

Third, analyze the reason of project cost is saving or exceeding; determine the economic responsibility attribution;

Forth, in view of the existing problems and take effective measures to improve the cost control work;

Finally, evaluate and assessment responsible departments and units for performance.

3. The way to reduce construction cost

In general, the way to reduce the construction project cost is to reduce the project construction of living and the consumption of materialized labor. But because of the characteristics of construction industry, after the completion of the construction is based on the total budget to settlement, if the project budget is low, it will affects the enterprise's cost directly. Therefore, the way to decrease the cost of construction project should be both income and savings. The way to reduce construction project cost has the following several aspects mainly:

3.1 Review the Drawing Carefully

In the process of construction, it must according to the figure construction. Construction enterprises should meet users' requirements and conditions, to ensure the quality of engineering design drawings for serious examine, and put up with the positive amendments, in obtaining permission from the user and design units, modify the design drawing, at the same time conduction cost increase or decrease in account.

3.2 Strengthen the Budget Management Contract

In the preparation of construction drawing budget, it must fully consider the possibility of cost. In general, according to the design drawings and budget norm of construction drawing budget, it must be the restriction of the budget quota, there are very few flexibility place.

3.3 Reasonable Organize Construction

The overall process of project construction is formed finally building products' main link. In order to complete the construction task, the first thing is to manage the construction preparation stage. From the point of view for reducing the project cost, it not only to make significant savings in the construction process of the construction cost, but also in construction preparation phase to pays more attention to economic benefits.

3.4 Carry Out The Technical Organization Measures

Construction enterprises in order to ensure complete and excess project cost reduction, technical measures for reducing the project cost plan shall be prepared. In order to guarantee the technical measures to the implementation of the plan, and achieve the desired effect, the construction unit shall be under the leadership of project manager, fully mobilize the public discussion, proposes more measures to finally organize by the project manager held a meeting to discuss, make a decision.

3.5 Increase the Labor Productivity

Improve the labor productivity means increase the number of products per unit time; it also means the production of labor time consumption per unit product. Improving the labor productivity can accelerate construction progress, shorten the construction period, construction project completion use at an early age, adding new production capacity, it can greatly promote reduce project cost.

3.6 Reduce the Consumption of Materials and Energy

In engineering cost, every material holds a large proportion, general civil engineering materials about 60% - 70% of project cost, and the installation materials have bigger proportion of. Therefore, in the process of construction, to save material consumption, reducing the project cost is the main way.

3.7 Save Indirect Cost

Indirect expenses project, involve widely, relationship complexly, if not strengthen control; it can easy to cause waste. Therefore, save indirect cost, is also one of the main ways to reduce costs.

Construction units should be in line with the arduous struggle, thrift business policy, I save money, improve work efficiency, and reduce the phenomenon such as non-production personnel.

3.8 Ensure the Engineering Quality

Attaches great importance to the engineering quality in construction process, it not only can reduce rework cost, reduce the engineering cost, but also the project completion after delivery can prolong service life, convenient for the user and guarantee the safety of the masses.

4. Construction Project Cost Control Method

4.1 Cost Accumulative Curve

Cost accumulative curve reflects some relatively independent part in the whole project or the whole project's engineering expenditure situation of datum. It can be directly derived from the cost budget plan; also can use network chart or the chart datum to set up separately.

Usually, it can use the following three steps to make project cost accumulative curve.

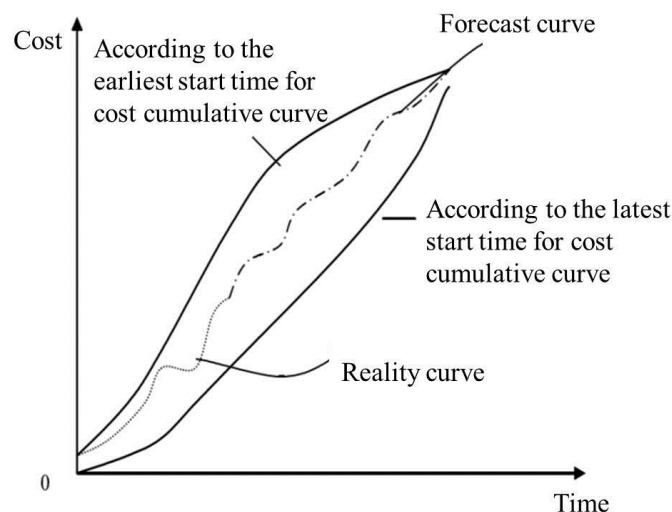
Firstly, we can establish a rectangular coordinate system, the time limit for a project of the horizontal axis shows project, and the vertical axis represents the cost of construction project.

Secondly, it should according to certain time interval or cell accumulation in the period of time spending in each process.

Finally, the amounts of the expenditure of each time period gradually accumulate; identify the time period of the accumulated capital expenditures. Then, at various points in turn connect with a smooth curve can be cost accumulative curve. Determining the corresponding points of each time period, the abscissa point for the time period, namely:

the period of starting time + (end time - starting time) / 2

Cost real spending on cumulative curve and ideal of any deviation, are warning signal, but is not to say that the work must have happened. The deviation on the graph only reflects the reality and the difference between the expected situations, so we must found that deviation to find out the reason, judge is normal or abnormal deviation, then take measures to deal with.



Graph: the Banana Curve

4.2 Banana Curve

We know that in the network analysis, a large number of non-critical process is need to adjust the start and end time, use the earliest start and latest start time of each process to make the cost of the accumulative curve is called the banana curve.

Banana curve shows that the safety of the project cost change interval, actual cost changes if not beyond the scope of two limit curve, belong to a normal change, can adjust the start and end time through the cost control within the scope of the plan. If the actual cost is beyond this range, we should attention; find out situation, analysis comes in. If necessary, it should have corrective actions quickly.

5. Conclusions and Prospect

Engineering project cost control level is the key for enterprise's benefit evaluation, the important way to improve the enterprise management level and reduce the risk of enterprise operation project involves multiple parties. So, in the process of project construction, it may hard to avoid deviation, strengthen the analysis and control of cost control in the deviation could be used to better achieve the aim of cost management.

However, in actual implementation of the project, the construction enterprises should take the cost control as the core, at the same time considering progress, cost, quality, and the influence of such factors as expected to eventually establish the project cost control system structure to a more complete and accurate.

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