

The Problems and Solutions Analysis for High-Speed Railway Cost Control

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Abstract—Railway construction is a large infrastructure project which has grand scale, complex procedures and complicated construction technique. The market competition of railway construction became more intense day after day according to the gradual improvement of the socialist market economy. Railway construction company has to improve the ability at project management and control project construction cost legitimately, this is the only way out in the intense market competition. However, currently there are many problems in our country's railway construction, which needs scientific and rigorous improvement and perfect urgently. This article aims to analysis the problems on construction cost control among railway construction, after that, some feasible improvement measures are proposed.

Index Terms—Railway construction, cost control, management strategy, problems analysis.

I. THE PURPOSE AND IMPORTANCE OF RAILWAY CONSTRUCTION COST CONTROL

The final goal of railway construction cost control is reducing cost as much as possible based on quality guarantee in order to achieve maximum benefits. So it is very important to control the project cost during the project implementation. The project construction cost control mainly includes scientific plan, control and verification to labour, materials, and cost consumed during the project implementation. Cost must be controlled throughout the whole construction course, it needs active involvement of and close cooperation of everyone involved in the project. Only if cost control is put on leading position in construction course, the company can achieve anticipated cost objective and obtain economy benefit from the project.

II. THE BASIC PROBLEMS IN COST CONTROL OF RAILWAY CONSTRUCTION

A. The Lack of a Deep Realization of Cost Management and Unscientific Management Methods

Many project managers don't realize the relationship between cost saving and create benefit during implementation. Resource saving means increasing profit amount for the company. Cost control needs active involvement of and close cooperation of everyone, only then can we implement cost control. But in the construction course actually, most of the construction companies haven't status active involvement of and close cooperation status of everyone. Most of railway companies haven't a clear realization about the importance of

every parts of the project, even put the cart before the horse. When they pay more attention to subsequent cost, the importance of the construction process real-time supervision and timely correction are ignored. Finally, the cost control will be lost, and the situation can't be retrieved. As the short time development on railway construction in our country, and the lack of enough theory and experience, what's more, external advanced theory can not be spread to China timely, confirming the planning cost and source consuming can't match the reality at the preparing period for construction, the cost deviation made in the construction can be rescued existing simple cost management system, and the achievement is very little.

B. The difference between Theory Plan and Real Implement

This is embodied in the efforts to control the cost management process is not enough. Manage roughly is the common problem of many railway construction companies, it appears more obvious in cost control. So the large difference between cost and budget by bad management cause waste resource and benefit lost. Currently many constructions management department not check though carefully in the factors which can affect project cost. The beneficial project becomes loss because lack of attention and not fix the difference in timely fashion.

C. Many Factors Affect the Construction Cost

There are many factors can affect budget during construction. For instance, requisition, environmental protection, construction period, materials fee, transportation cost and manpower consume. Once project cost is different with realistic even use the scientific save it still cannot change the fact that is already wasted. Even our country is on the top of railway construction period but because our country's railway construction started late, lack of experience and foreign advanced management theory. There are many constraints and incentive mechanisms defects in railway design units, finally lead the low quality of design documents, those are the important factors that affect our country's railway construction cost control theory and scientific. There is also a common phenomenon that Project Manager only focuses on construction period and quality but no on the cost. Construction budget is relying on other department. So this way that separate "count" and "do" will definitely cause bad cost control result. The construction conditions diversity and variability of the construction program because of railway construction has grand scale, many procedures and complicated construction technique.

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III. COUNTERMEASURES TO IMPROVE THE EFFICIENCY OF THE RAILWAY CONSTRUCTION COST CONTROL

The construction project cost control is to supervise the construction process in accordance with the previously drawn up a good implementation, control and audit, ensure every target is under control. Project cost control is a dynamic control, the need to manage personnel in the implementation process in real time on the construction program to fine-tune the construction schedule changes, but also pay attention to conform to the changes in the environment around the development of rational progress and implementation of programs. The desired engineering function and schedule requirements while optimizing costs, the total cost of control within the scope of the scheme, is the basis of the project cost management, core and key.

A. Principle of Cost Control

1) Fully control principle

The overall cost control is to project all employees are actively involved in the project cost control task, the formation of the situation for everyone involved, everyone control. Comprehensive process control requirements and cost control throughout the implementation process as the project progresses continuously, to maintain the appropriate speed and progress. So that project cost control once completed. The project cost control is dynamic control, emphasizing the timeliness and diversity of control. Only dynamic control in order to avoid a situation to remedy the situation occurred.

2) The principle of increasing income and reducing expenditure combination

There are two ways of increasing the company's profit: one is to increase income, the other is to reduce the cost. Therefore, to reduce the project cost is the main dominate factor under the premise of determination of company's existing human, material and financial resources. Only a company do deeply understand the relationship between increase income and reduce expenditure, can faster set out to achieve the golden ratio between them. Thus in the construction process, the company may increase the income, on the one hand, save spending to achieve the anticipated profit. After a serious scientific review on each spending about whether it is accordingly reasonable or not and check if the payments to achieve scientific balance.

3) The principle of target management

Target management just as its name implies is a major goal refining into small targets to complete one by one. In the process of implementing, it is necessary to decompose out great plan policy, purpose and method, meanwhile, draw up a detailed method statement and finally be carried out and realized by the relevant departments.

4) The principle of responsibility light and interest combination

In the process of project implementation, the responsibility, rights and interests of all levels of management personnel and construction personnel are not the same. But all are following the rule that rights, interests and responsibilities are positively related. When senior management personnel have more rights, at the same time, they also have a great responsibility. o company in the implementation of the

project, shall audit, reward and punish the staff's working performance in the course of each layer. To fully play the importance of the incentive mechanism in the cost control, to realize the combination of evaluation and personal interests. Combination of three will fully mobilize the enthusiasm of the employees at all levels, to ensure that the cost control measures into practice

B. Method of Cost Control

1) Construction duration- cost synchronization to control cost

Among the construction enterprises in our country, many are unable to achieve the perfect combination of construction schedule and cost control, in fact, there is certain connect between cost control and construction progress, along with the extension of construction progress, the project construction cost has been increased and the cost control is also in extension. So there are inevitable synchronous relationships between them. If construction schedule and cost control cannot be matched, it will cause the virtual surplus and virtual kui phenomenon

2) Resource consumption control with method statement

The resource consumption in construction project is inevitable, but the different construction scheme of the same construction projects will produce different resource consumption. So we need to understand scientific importance of method statement before construction because to reduce consumption of resources is equivalent to increase the project benefits. Meanwhile, in construction process the dynamic cost control project operation timely correcting deviation, adjust the construction schedule and resource consumption ratio for project cost control have a huge impact through the value analysis, in the premise of guarantee function, reduce the cost in the cost under the condition of constant improve function, achieve the optimal configuration of cost consumption.

3) Self-control of resource and cost

Practice has proved the construction cost of raw materials used for the whole project cost, therefore, the proportion of the biggest in project cost control of the stand or fall of material cost control will be related to the final project cost control, at the same time, the success of the team through the scientific planning and staffing, can be in does not affect the project schedule and quality under the condition of appropriate staff cuts in the implementation process, can choose versatile production personnel, improve the production efficiency can also use more casual and less with the regular employees way to reduce the cost on this basis, can also add some effective rewards and punishments measures, motivation and urge employees to improve work efficiency according to the reasonable scientific research and analysis, the reasonable arrangement of construction section, improve the utilization rate of mechanical proper reduce mechanical use Numbers, reduce the cost of machinery for the cost to rent the mechanical equipment, to improve the market survey touch bottom the advantage to this is that rent construction machinery cost low, buy machine costs high, this kind of method is practical and economic

C. Measures of Cost Control

1) Cost control in advance

Cost control in advance is concerned to the execution plan

and direction of cost control system. Construction project planning and resource consumption budget should be formulated scientific and reasonably, and making a precise investment estimate during the feasibility study of construction project. The accuracy of investment estimation directly influences the investment decision in the primary period of basic construction project, and makes sure the cost management and cost control management running properly during the construction phase of a railway project. Railway project investment estimation has become a vital factor in the investment decision making period. The competent authorities should make a strictly estimation based on the practical data, which includes not only preventing an omission, but also preventing an overestimation, eventually, the railway project investment estimation can play a fundamental role in the total cost of the project. In addition, based on the environmental, economic and technical condition of the construction site, the contractor must make a comprehensive and systematic analysis the difficulty of implementation of the project, make appropriate adjustments, and reduce the cost.

2) *Post-cost assessment*

After the construction, the contractor should compare the actual cost during the construction stage with the prepared total cost plan. The analysis results can be shown in tables and figures. The contractor should not only compare the relationship of total cost, but also check the cost of individual processes. The contractor should try to find the reasons of variation of the cost of the individual processes. Construction condition, construction plan and material cost can influence the cost of individual process of the construction. Constantly summarizing the management experience, maintaining the working efficiency, improving the management structure, construction cost assessment is defined as, after the construction completed, comparing and evaluating the actual cost with the budget value of each individual member, based on the relative regulations of the responsibility system for each individual member. Then giving appropriate rewards and punishment accord to the assessment record of each employee's performance, a science reasonable incentive mechanism could inspire and encourage employee working more efficiency.

IV. CONCLUSION

Because of our country's railway construction has a late

start and railway management system and operation mode has not formed a relatively complete knowledge theory system along with our country market economy gradually perfect, the national economy strides ascension and national policy is perfect and the deepening of the reform of railway construction, the construction of national infrastructure construction as an important part, has gradually become the core of the reform of the infrastructure construction of strengthening the management of enterprises, To improve the scientific management level is the railway construction enterprises change their operational mechanism to realize make up deficits and increase surpluses and one of the important ways to strengthen the project cost control is the top priority of the railway construction project management, cost management level will directly impact the enterprise's income size .If the enterprise hope to realize the profit maximization, a set of effective cost management technology must be found from the railway construction project.

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