

Study on Different Types of Tenders, Tender Qualification/ Processing, Quantitative Techniques for Tendering, Planning and Monitoring- A Review

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Abstract— Indian construction industry has played a vital role in the process of economic transformation and furtherance for over five decades and is the primary input for the socio-economic development of the country. Increasing complexity in design and involvement of numerous stakeholders in modern construction projects are huge challenge for both clients and contractors to meet criterion of skills and capabilities required to successfully deliver a project at bidding stage. Implementation of tender process will increase the opportunity for bid documentation and as well free development of technology. Most of the companies are proficient in engineering and technology. For documentation of tender there will be many kinds of discussion and implementation of latest techniques accordingly to the growth of knowledge among the employees and owner for revising each and every aspect of work to be done correspondingly without loss. The decision to bid is a major financial decision because of two reasons. First, the contractor assumes substantial costs for the preparation of estimate and tender at risk of not recovering them if he is not awarded the job. Second, and most importantly, the contractor commits himself as a surety of his work to attract the investment done within the company. To improve or develop the company to with stand the competitors in the market. A wise decision is to be taken than only the bid may give some kind of satisfaction with low and admirable cost estimate.

Keywords— Tender Notice, Tendering Process, Bid Documentation, Planning & Monitoring.

I. INTRODUCTION

Tendering is the most commonly used techniques of construction to call different types of bidders along with their own documentation. Tendering is defined as the “process of preparing and submitting for acceptance conforming offer to carry out work for price thus converting the estimate to bid.

Following the aims and objectives for nature of tendering:

- Provide an environment that encourages interest and competitive offers from suitable qualified and experienced construction contractors.
- Obtain a fair price and best value for undertaking process of construction works.
- Obtain a clear understanding of rights and obligations of all parties.

- Allow resolution for general issues requiring clarification to all tenders.
- Allow resolution for specific matters only relevant to a particular tender’s bid.
- Reduce the likelihood of misunderstandings and disputes during the construction phase.
- Secure a construction contractor to undertake and meet the required project scope, time, cost and quality parameters.

Mandatory requirements

All project tenders must comply with the competition and consumer act 2010. The Australian consumer law prohibits anti-competitive practice and also refers to as restrictive trade practices.

Tendering is a means for a contractor to win the right to deliver a construction project. However, tendering could also happen between the interface of contractor and subcontractor ; contractor and supplier, client and consultant, owners and engineers, engineers and workers, etc.

The term tendering is to describe all the actions performed by the awarding authority to produce, publish and manage tendering documents.

The main aim of study is to examine the credibility of different kinds of contracts in construction of roads. They are as follows:

1. FIXED PRICE CONTRACT
2. PERCENTAGE RATE CONTRACT
3. PPPT METHOD
4. EPC METHOD
5. HAM METHOD
6. SWISS CHALLENGE METHOD

Fixed price contract:

- Under the fixed price contract, the contractor agrees to perform the work specified and described in contract for a fixed price. The price of fixed contract can only change upon the execution of change order, under which the owner and the contractor either
 - a. Agree for the contractor to perform additional works that falls outside the scope of original work for an agreed upon extra competition.

- b. Agree to remove certain work from the original scope of work and reduce the price of contract in proportion to the work the contractor no longer has to perform.

Percentage rate contract:

- Contractors should submit the rate percentage above or below the current schedule rates.
- Simplifying corresponding rates of all comprehend for contractor.
- Appropriate for small value of contracts, When an item of work is few and belongs to same category.

PPPT method:

Common forms of Public Private Partnership in the road sector are:

- Design-Build-Finance-Operate-Transfer
- Build-Operate-Transfer (TOLL)
- Build- Operate-Transfer (Annuity)

Concessionary turnkey type of contract including financing in addition to design and construction, operation and maintenance of public and private revenue earning projects.

It is way of overcoming the budgetary constraints needed infrastructure for growth.

EPC method:

EPC is a popular model being adopted globally in many projects like road constructions, rooftop solar projects, etc. Ahead Government chose EPC over PPP in 2014, road construction rate had decreased significantly to around just 3km per day. EPC stands for Engineering, Procurement Construction.

Ham method:

Ham stands for Hybrid Annuity Model, is a combination of EPC model and BOT–Annuity model. Under these model the Government will dispense 40% of the project cost to the developer to start work while remaining investment has to be made by the developer.

TYPES OF HIGHWAY PROJECTS

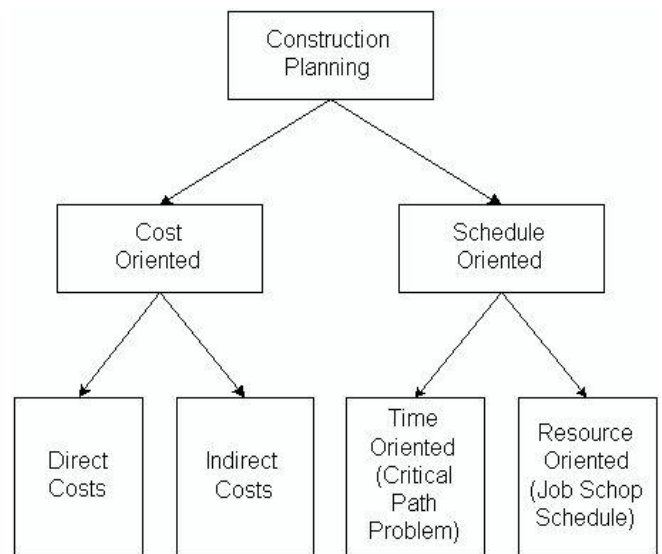
EPC MODEL	BOT MODEL	HAM MODEL
Govt. invites bids on EPC	Invitation of bids by NHAI	IT MIX OF EPC AND BOT MODELS. (Discussed in details in presiding table)
Govt. bears construction cost.	Has to create special purpose vehicles	
Govt. bears procurement of raw materials.	SPV may be private company or Govt. company	
Participation limited to engineering expertise	Financing, design and construction developing , collecting toll	

SWISS challenge model:

Swiss challenge is a way to award a project to a private player on an unsolicited proposal. Such as projects may not be in the bouquet of projects planned by the state or state owned agency, but are given in gaps in physical or social infrastructure that they propose to fill. And the innovation and enterprises that private players bring. (Latest updating technique right now implemented in developing of both residential and infrastructure in AMARAVATHI, ANDHRA PRADESH).

Planning and Monitoring:

- Planning of construction activities is a rudimental and provoking activity in the management and execution of construction projects. Its involves the choice of technology, the definition of task, estimation of required resource and duration of individual tasks.
- A solid marketing plan will help you attain gross income and sales goals. A SWOT analysis (strengths, weakness, opportunities & threats) is an effective technique for creating a winning marketing plan. SWOT is also used in strategic plan creation as a foundation technique. Construction activities are usually executed by following the techniques includes a breakdown structure; program elevation and review technique, or PERT, or chart; and Gantt charts. A work breakdown structure reduces complexity by breaking down the work to be done in individual tasks that are the responsibly of a particular employee.
- A Construction plan is found to be good is premise for developing the budget and the schedule of work. Developing the construction plan is the difficult task in the management. Construction planning consists of two cases they are:



Vehicle categories and their sizes

Category of vehicle	Average Dimension in (m)		Projected area on Ground (m ²)
	Length	Width	
Car	3.72	1.44	5.39
Bus	10.1	2.43	24.74
Truck	7.5	2.35	17.62
L.C.V	6.1	2.1	12.81
trailer	7.4	2.2	16.28
3-wheeler	3.2	1.4	4.48
motorbike	1.87	0.64	1.2
Bicycles	1.9	0.45	0.85

Speed Statistics of Individual Vehicles

Type of vehicle	Mean Speed (Km/h)
Car	54.40
Truck/bus	41.00
Two-wheeler	39.54
Light Commercial Vehicle	39.69
Rickshaw	39.18
cycle	11.32
Trailer	38.53

II. LITERATURE REVIEW

Edwin H. Chan, Maria C. Au

This states that the risk for a contractor in sudden increase of material rates as per not given with the risk transfer. Therefore, understanding the factors influencing the contractors pricing of contract risk is crucial for employers to optimize the cost effectiveness of risk allocation in contracts. The features that contractors recognize to be dominant when they are pricing time related contract risk.

Aftab Hameed Menon, Ismail Abdul Rahman;

In Malaysian, traditional lump sum system, design and build/turnkey system says that the typical contractual relationship under traditional method in order to take the relation between client with contractor & consultant, and contractor with sub-contractor & supplier. Typical sequence of operations like brief, design, tender, construction. Management procurement: client with main contractor & consultant and by the same time with workers. Operations of management procurement brief, design, construction.

Tejas C. Patil, Ashish P. Waghmare, P.S.Gawande

The rapid evolution of e-commerce in the past few years has introduced many ways for organizations to perform tendering process and participate in bidding. With a new conceptual techniques by reducing time and cost factor. Buying goods or services or engaging a contract for civil works like building roads, houses, and factories is an important activity. Contractor should develop their own planning, creation and administration in three steps they are:

- Planning department
- Contract creation department
- Contract administration department

Dr. Jim Mason, department of architect

It deals with the topic of Building Information Model with the pace of innovation and need to legal solutions and accommodate new approaches. Intelligent contracts work best were they are of short term or of instantaneous effect. The hypothesis advanced is that certain aspects of the construction contract cannot be fully intelligent and the best that can achieved in short to medium sale of contracts.

Fani Antoniou, Georgious N. Aretoulis

The choice of most appropriate contract type regarding the method of contractor compensation is one of the most essential and complex decision. In addition with the construction process s always technologically complex as it is comprised of numerous task and objectives.

Vladimir Obradovic, Petar Jovanovic

The implementation of these research are important to both project managers who wish to improve their performance and successes rate and organization in their human resource policy.

There is a very high positive correlation between emotional intelligence and professional success.

For recruiting staff to the position of project managers should consider the concept of emotional intelligence. But not only for the project managers has it also revealed to decide on human resource development program.

H. Randolph Thomas, Ralph D. Ellis

Many of the small or medium sized construction companies will show less interest on operational planning. Its better to develop for pre-bid plans reduce costs and shorten schedules and improve labor productivity. The planning process consists of eight steps pressingly important for the growth of the company with high profits and minimizing of work load among the labors with their safety vision.

Yong-Cheol Yang, Chan-Jung Park, Ju-Hyung Kim & Jae-Jun Kim

For getting accuracy of work in the site done in the site of day to day progress. These can be done by the means of DPR under the progress of planning department in camp area to the office of client along with the pictures of construction. Through these the client can understand the condition of site in the office itself. But in these article it is explained for a multi- apartment building.

Unmesh. Y.Polekar, Rohit.R. Salgude.

It consists of proper planning and scheduling is most efficient part in completion of project without time lagging and knowing in glance for the material required. And regular monitoring of the project will give satisfactory work for the workers and engineers working in that project. Mainly the planning office should know about the conditions corresponding to the respective manner by using some kind of software techniques.

Md Imran Khan, Maneeth P D, Brij Bhusan S

Its gives the information on the procedures adopted for recording, reporting & collecting information related to the performance of project by the use of DPR and MPR to estimate the progress stage of the project which have to be cross checked by the pre-bid scheduling if any lagging of plan should be taken to the view of that engineer to give the corresponding reason and explanation for the delay of work.

Mr. Nilesh D. Chinchore, Prof. Pranay R. Khare

it deals with the construction equipment planning and its uses in very crucial time at which the time management may be rectified by a firm to continue its standards. With these the resource leveling and allocation for different kinds of works with multiple equipment to complete the project in means interval of time. Construction planning aims at identifying construction equipment for executing project task assessing equipment performance capability.

III. CONCLUSION

HAM [Hybrid Annuity Model]

Is a mix of both EPC (Engineering Procurement and Construction) and BOT (Build Operate Transfer) models. Under EPC model, NHAI pays private players to lay roads. The private player has no role in the road's ownership, toll collection or maintenance (it will be taken by the Government). Utilisation of BOT model have been indicated that private players have an agile role they build operate and maintain the road for specified number of year's say 10-15 years. Before transferring asset back to the Government.

Now HAM combines EPC (40 per cent) and BOT (60 per cent). On behalf of the government NHAI releases 40% of total project cost. All kinds of loan clearance will be taken up by the government. According to different states they were giving % as say in Tamil Nadu is giving 50% as well Karnataka giving 75% of the total project cost. As per the scope of emergency they were releasing the high percentages. Material escalation will also paid by the government.

From my regarding the HAM method is useful and efficient to attract all competitors in construction industry.

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