

Contractual Steps for Smooth Delivery of Infrastructure Projects

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Abstract — Governments and public entities spend huge public money for purchase of goods, services and construction of works. Therefore, it is vital that procurement system shall not only be efficient but also be transparent, fair & just without compromising the quality of output. Various stakeholders have different interests in influencing the decision-making. This paper elaborates various possible alternative strategies available for procurement. Depending upon environment and various challenges, one can choose the best mode, method & process of procurement. The procurement could be for goods, work, services, consultancy etc. Consultancy contracts are different game altogether, because they have more emphasis on intellectual inputs rather than mere physical outcome. The scope of this paper is limited to works procurement.

Keywords— Procurement steps, contracting, Infrastructure contracting.

I. INTRODUCTION

Public contracting or public procurement is an important economic activity of any government, which has direct impact on economy of the nation. It is not only that awarding a contract or finalization of procurement would suffice but most important aspect in current scenario is that the whole process shall be inclusive, transparent, fair, equitable & just. The process shall also comply with international obligations, which has been signed in different treaties such as WTO. The most important factor is image and efficiency of the procurement. Robust image of procurement, not only encourages entrepreneurship but also attracts investment from private and from off shore, helping in building economy of the countries.

This paper has identified various issues related with public procurement in order to get optimal procurement strategy under different circumstances.

II. OBJECTIVES

At the early stage of a project and once a project manager is selected, the main issue that faces the owner is to decide on the contract strategy that best suits the project objectives. Contract strategy means selecting organizational and contractual policies required for the execution of a specific project. The development of the contract strategy comprises a complete assessment of the choices available for the management of design and construction to maximize the likelihood of achieving project objectives. The scope of such contracts is very wide, from a simple purchase of standard article to multi-million Rupees projects. The size and complexity of the contract matter vary accordingly.

A proper contract strategy for a project involves four key decisions:

- Setting the project objectives and constraints
- Selecting a proper project delivery method
- Selecting a proper contract form / type
- Contract administration practices

Objectives of project delivery and objectives of procurement strategy shall normally align. However, these may be at variance and at conflict creating a challenging situation for managers.

A. Project Objectives/Constraint

The client will have a number of overall objectives. These objectives may be of primary and/or secondary importance. Primary objectives include functional performance, time objectives, and cost objectives.

a. **Project Scope (performance):** The project scope defines the extent or the area that the contract covers. Any additions or omissions during the life of the project will increase or decrease the quantity of work involved. Likewise, any changes in design must be discussed carefully to establish whether or not they are likely to affect the scope of the project.

b. **Time:** The scope and time are closely interrelated. Decisions must often be made on the effect of increasing or decreasing scope on time. If the completion date of a project is critical, then increasing scope will call for an accelerated program. The extra cost associated with this acceleration must be quantified.

c. **Price:** The cost of a project is closely related to scope and time. The effect of the contract on price, and the various incentives and penalties that can help to keep price steady must be discussed and clearly defined.

On the other hand, secondary objectives could arise on a construction project and would exert a major influence over contract strategy decisions. Examples of secondary objectives are:

- Allocation and payment for risk.
- Training of the client's staff.
- Transfer of technology.
- Involvement of contractor in design.
- Involvement of client in contract management.
- Choice of labour-incentive construction.
- Use of local material and resources.
- Protection of the environment.

Generic project objectives could be enumerated as

- Minimize project cost
- Maximize the project scope and improvements within the project budget.
- Minimize project delivery time
- Complete the project on time
- Provide high quality design
- Select best team
- Minimize inconvenience to traffic during construction
- Maximize safety during construction etc...

B. Project constraints

All construction projects have constraints that influence the achievement of the project objectives. These constraints should therefore, be considered when choosing an appropriate contract strategy. There are varieties of constraints and these are examples:

- Availability of funds.
- Availability of contractual incentives.
- Method of tendering.
- Project location.
- Target dates of the project.
- Possibility of design changes.
- Availability of resources.
- Seasonal working.
- Number of contractors willing or able to tender.
- Inflation.

C. Procurement objectives and challenges

Procurement requirements normally include timelines, cost-minimizing competition, maintaining transparency & integrity, minimizing financial & technical risks. There are also conflicting economic goals related with social, environment, and international trade agreements. Therefore, in complex projects/requirements, the public procurement cannot be considered just a clerical exercise. Whereas, it requires strategic planning consistent with goals/objectives surrounded by internal & external challenges.

D. What is a Contract:

A contract is defined as: "an agreement made between two or more parties which is enforceable by law to provide something in return for something else from a second party". Contracts can be very simple or they may be very long and complicated legal documents. When a contract is properly set-up, it is legally binding upon. The two parties are expected to perform the various obligations they have undertaken, as expressed in a mutually agreed set of contract documents. A contract therefore, is necessary to protect both client and contractor. According to its simple definition, a contract is an agreement enforceable at law, but not all agreements are contracts. Some elements must be present before an agreement becomes a contract. These elements are:

Competent Parties: For an agreement to be a contract, there must be two or more competent parties. In order to be considered competent, a part must have a certain legal standing.

Proper Subject Matter: For the subject matter of a contract to be proper, the first requirement is that it was be clearly defined as to the rights and obligations of each party. Second, the purpose of the contract must not violate the law.

Consideration: There must be a lawful and valuable consideration given to both parties. A Consideration often called "Something for something."



Agreement: For valid contract, there must be a mutual agreement. An agreement is considered to have been reached when an offer made by one party is accepted by the second party. Both parties must wish and intend their bargain to be enforceable by law.

Proper Form: The terms of a contract must be written so that both parties are very sure of what their rights and responsibilities are.

Consent of the Parties: The agreement must be free from Misrepresentation, Duress Undue influence, etc.

Procurement objectives have been defined by various agencies as under:

E. World Bank

In general, following, generally, guide the procurement process: -

- a) The need for economy and efficiency in the implementation of the project, including the procurement of the goods and works involved.
- b) The Bank's interest in giving all eligible bidders from developed and developing countries the same information and equal opportunity to compete in providing goods and works financed by the Bank;
- c) The Bank's interest in encouraging the development of domestic contracting and manufacturing industries in the borrowing country; and
- d) The importance of transparency in the procurement process.

F. Public Procurement Bill

The objectives of the public procurement bill 2012 are "to regulate public procurement with the objectives of ensuring transparency, accountability and probity in the procurement process, fair and equitable treatment of bidders, promoting competition, enhancing efficiency and economy, maintaining integrity and public confidence in the public procurement process and for matters connected therewith or incidental thereto."

G. Factors influencing contract choice

Three main factors influence the choice of a given contract including: the incentive, risk sharing and the flexibility.

H. Internal Challenges

Procurement policy takes challenges from within depending upon type of goods, services, capital assets etc. are required. Interaction between various arms of department, executing agency influence the procurement decision. Process, methods, organizational structure, professionalism of staff also impact the procurement strategy. Internal policies make it a tight rope walk, which may be in conflict with the objectives.

I. External Challenges

External factors such as market, political environment, legal environment and other socio-economic factors impose challenges to public procurement.

(i) Legal

Here it is referred to general /broad legal frame work prevailing in the society e.g. various regulations dealing with safety and health at work place, pollution control, finance regulations, right to information, dispute resolution mechanism, contract law, dealing with equal opportunities for women and minorities etc. However, if laws regarding such issues are not comprehensive, the contract may need detailed provisions.

(ii) Political

In democratic setup, various interest groups play an important role to influence public procurement strategy. These interest groups include trade organizations, professional associations, business firms or companies etc. Types of influence vary from influencing procurement guidelines, procurement process, technical specifications, budget authorization etc. Eventually, a compromise view emerges for adoption. In certain cases, coalition of policy makers, bureaucrats and interest group exist to push forward their agenda. Public procurement strategy has choices, one side it is faced with political pressure and on other side maintaining sound economic decision.

(iii) Social

Policies on social issues such as affirmative action towards certain section of society e.g. tribal, backward groups etc. play an important influence in procurement strategies. Environmental protection movements, activities of various groups concerning to wild life, animals, monuments etc. also put pressure on procurement policies. Commitment on foreign policy, trade agreements etc. also have bearing on decision making.

(iv) Cultural

Public procurement system is also influenced by culture and technology. Knowledge & spread of information technology have changed the procurement strategy and process. In certain cultures, giving gift is a common public relation activity however; it is difficult to distinguish between gift and bribe.

(v) Market Environment

Market conditions influence competition and determine outcome of procurement process. Market conditions vary from country to country and vary from sector to sector. Even under a perfect competition market, certain supplies/services may have a monopoly. New challenges also arise in order to comply with governments procurement laws, international treaties, custom regulations etc. There is tough choice to allow foreign firms along with domestic firms, putting pressure on domestic players.

III. MODE OF PROCUREMENT

The project delivery method translates what project parties are involved in the project and how they interact with each other and called also project organizational structure. The choice of an organizational structure should be related to project objectives and constraints. It can be facilitated considering the following factors:

- a. Size and nature of the work packages within the project.
- b. Selection of the design team form in-house resources external consultants or contractors.
- c. Process of supervision of construction.
- d. Restrictions upon using combination of organizational structures within the project.
- e. Expertise which the client wishes to commit to the project.

When plans are completed and the owner is interested in securing the low price, the use of competitive bids is suggested. The competitive bidding results in the type of contract that many are familiar with.

A negotiated contract should be used when construction should start before plans are completed or when the many unknown factors of the project make an accurate estimate impossible. When many changes are expected and when inspection and supervision cannot be done efficiently, the negotiated type of contract should be used. The various project delivery methods are summarized as follows:

A. Traditional approach

This is the most common approach in civil engineering projects in which the design has to be completed before construction can start. Design and construction are usually performed by two different parties who interact directly and separately with the owner.

The pros and cons of this approach are summarized as follow:

Advantages:

- a. Price competition
- b. Total cost is known before construction starts
- c. Well documented approach used in most government projects.

Disadvantages:

- a. Long time
- b. Design does not benefit from construction expertise
- c. Conflict between owner, contractor and A/E

Therefore, this method is fine in many cases where the project is clearly definable, design is completed, time need not be shortened, and changes are unlikely to occur during construction.

B. Admeasurement contract

In this type of contracting, items of work are specified in Bills of Quantities or Schedule of Rates. The contractor then specifies rates against each item. The rates include risk contingency. Payment is paid monthly for all work completed during the month. The contract offers a facility for the client to introduce changes in the work defined in the tender documents. The contractor can claim additional payment for any changes in the work content of the contract. Claims resolution is very difficult because the client has no knowledge of actual cost or hidden contingency. Tender price is usually increased by variations and claims. Two forms of admeasurement contract are usually used: bill of quantities and schedule of rates.

Bill of Quantities Contract: Tenderers enter rates against each item of the estimated quantities of work. The quantities are re-measured during the course of the contract, valued at the tendered rates and the contract price adjusted accordingly.

Schedule of Rates Contract: It contains inaccurate quantities of work, possibly with upper and lower probable limits. Therefore, it is common for separate rates to be quoted for labour, plant, and materials. The contract price is derived by measuring the person-hours, plant-hours and the quantities of materials actually consumed, and then pricing them at the tendered price. This contract is best suitable for repetitive works.

The admeasurement contract is well understood and widely used. It can be used when little or no changes are expected, level of risk is low and quantifiable, and when design and construction need to be overlapped.

C. Direct labour

In this approach, owner organization performs both the design and construction using its in-house labour force.

- a. Used by large authorities
- b. The owner performs both the design and the construction
- c. May use consultants for some specialized designs
- d. Most suitable for small projects
- e. Can be used when expertise is available
- f. Low risk projects
- g. Inadequate scope definition

D. Design-build

In this approach, a single organization is responsible for performing both design and construction and, in some cases, providing certain “know-how” for the project. The pros and cons of this approach are summarized as follow:

Advantages:

- a. One contract that may include know-how
- b. Minimum owner involvement
- c. Used for fast-track projects in order to reduce time
- d. Co-ordination between design and construction and easier in implementing the changes

Disadvantages:

- a. Cost may not be known until end of the construction
- b. High risk to contractor and more cost to owner
- c. Design-build company may reduce quality to save cost

The use of this approach, therefore, should be considered when contractors offer specialized design/construction/know-how expertise or when design is strongly influenced by the method of construction.

E. Design and build lump sum contracts

In this mode contractor agrees to execute the complete work with all its contingencies. Such type of strategy is most suitable in case of large projects where the aims are:

- a) Innovation of private initiatives
- b) Economy of scale (Contractor using standard designs, module, technology etc.)
- c) Speed of construction

This method is also referred as turn-key contract with some variations.

F. Turnkey

This approach is similar to the design -build approach but with the organization being responsible for performing design, construction, expertise (if any), and project financing. Owner payment is then made at the completion (when the contractor turns over the “key”). An example is franchise projects in which a new branch of a restaurant chain needs to maintain the same design, construction quality, and food service quality.

G. Cost-reimbursable contract (cost-plus contract)

The contractor is reimbursed for actual cost plus a special fee for head office overheads and profit, no special payment for risk. Payment may be made monthly in advance. The contract involves a high level of flexibility for design changes. Final price depends on changes and extent to which risks materialize. The contractor must make all his records and accounts available for inspection by the client or by some agreed third party. The fee may be a fixed amount or a percentage of actual costs. This contract has no direct financial incentives for the contractor to perform efficiently. It may be used when it is desirable for design to proceed concurrently with construction and when the client wishes to be involved in contract management.

H. Target cost contract

Cost targets may be introduced into cost-reimbursable contracts. In addition to the reimbursement of actual cost plus percentage fee, the contractor will be paid a share for any saving between target and actual cost, while the fee will be reduced if actual cost exceeds the target. The target figure should be realistic and the incentive must be sufficient to generate the desired motivation. Specified risk' can be excluded from the tendered target cost. When these occur, the target cost is adjusted accordingly and the client pays the actual cost incurred by the contractor. The target may also be adjusted for major changes in work and cost inflation. This contract can be used in the same circumstances as the cost-plus contract.

I. Time and material (T&M) contracts

T&M contracts are a hybrid type of contractual arrangement that contains aspects of both cost-reimbursable and fixed-price-type arrangements. T&M contracts resemble cost-type arrangements in that they are open ended, because the full value of the arrangement is not defined at the time of the award. Thus, T&M contracts can grow in contract value as if they were cost-reimbursable-type arrangements. Conversely, T&M arrangements can also resemble fixed-unit arrangements when, for example, the unit rates are pre-set by the buyer and seller, as when both parties agree on the rates for the category of "senior engineers." Most appropriate when the buyer wants to be more in control. It is also used in an emergency to begin work immediately when a scope of work has not yet been completed. Not possible at time of placing contract to estimate extent or duration of the work, or anticipated cost, with any degree of confidence.

J. PPP (Public Private Partnership)

In this mode the private firms or consortium agrees to construct with its own cost in lieu of future revenues over a period of time. Various models like BOT, BOLT, BOOT or BOO under PPP are available depending upon type of work, preparedness of the project, future projections, funding arrangement, leverage, risk sharing arrangements etc. In this approach, a business entity is responsible for performing the design, construction, long-term financing, and operation and Maintenance of the project. At the end of the operation period, which can be many years, operation of the project is transferred to the owner. This approach has been extensively used in recent years and is expected to continue. An example of its use is in express routes and turnpikes. A consortium of companies shares the cost (design, construction, financing, operation, and maintenance) and the profits gained from user fees, for a stipulated number of years. Afterwards, the project returns to the government to become publicly owned. This approach has also been used extensively in large infrastructure projects financed by the World Bank in parts of the world that cannot afford the high investment cost of such projects.

IV. METHOD OF PROCUREMENT

Generally, competition is a basis of efficient contracting strategy. However, in selective cases requiring skilled and specified work, procurement can be through limited competitive or through single source. Any of the following methods could be resorted by following general principle of economy, efficiency and transparency.

A. International competitive bidding

In this method, notice of bid is advertised globally to invite eligible prospective bidders from eligible countries to participate in the bidding process. This method brings not only overseas technology work culture but also overall economy.

B. National competitive bidding

This method is normally used by open advertisement within country. This method is most suited for goods, works; services that are available locally at prices below the international market and the works are limited intensive.

C. Limited bidding

Limited bidding is by direct invitation without open advertisement. This method may be appropriate where:

- a. There are only limited nos. of suppliers
- b. Value of contract is not very large
- c. Emergency situations
- d. Security reasons, which do not justify open competitive bidding.

D. Single source bidding

This strategy is adopted for special works or in emergent situations. Employer can select firms based on qualification and experience. There is no competition in such bidding method.

V. PROCESS OF PROCUREMENT

Depending upon complexity and regulatory requirements, the bidding process can be very short or very elaborate and exhaustive. Generally, following processes are used:

- a. Single Packet without PQ (Prequalification)
- b. Two Packet without PQ
- c. Single stage two packets with PQ
- d. Two stage with PQ

The above processes could be interactive with the bidders by way of pre-bid submission meetings. Depending upon the complexity and size of the project, further stages can be added to meet the objectives.

VI. CONTRACT ADMINISTRATION

As it was discussed in the previous sections, there is variety of types of contracts used in civil engineering projects. Each type has its specific characteristics. Contracts may be prepared under the heading of one type but could include characteristics of more than a single type. Many professional societies and government agencies have done a great deal toward the standardization of construction contracts such that the general form and content are well established for the various types of construction that may arise.

A. Professional construction management (PCM)

In this approach, the owner appoints a PCM organization (also known as Construction Management organization) to manage and coordinate the design and construction phases of a project using a Teamwork approach. The design may be provided by specialist design firms and in some cases by the PCM organization. With high level of coordination between the participants, innovative approaches of overlapping design and construction (i.e., fast tracking) can be adopted. The PCM organization aims at holding a friendly position similar to that of the consultants in the traditional approach.

The services offered by the PCM organization overlap those traditionally performed by the architect, the engineer, and the contractor. This may include: management and programming of design; cost forecasting and financial arrangements; preparation of tender documents; tender analysis and selection of contractors; selection of methods of construction; recommendations on construction economics; planning and scheduling construction works; materials procurement and delivery expedition; provision for site security, cleanup, and temporary utilities; supervision of control of construction contractors; construction quality assurance; cost control; costing of variations and assessment of claims; and certification of interim and final payments to contractors. The use of PCM approach, therefore, should be considered when there is a need for time saving, flexibility for design changes is required, and owner has insufficient management resources.

B. Contract documents

The contract is defined by the contract documents, which are developed from the tender documents. In a logical order, these documents refer to the following subjects:

- a. Input from the client (task description).
- b. Output of the contract (specifications, results to be achieved).
- c. Prices for the contractor's contribution.
- d. Responsibilities and procedures (liability, resources provided, time schedule, payment conditions, change procedures, etc.).

Contract documents are usually arranged according to the following sequence:

- a. General (for any project).
- b. Special (for a specialty area of the project).
- c. Supplementary (unique to a given project).
- d. Additional (during bidding or negotiation).
- e. Agreement form (for signing very important and particular clauses).
- f. Modifications (during contract fulfilment).

The complete contract agreement usually consists of the following documents:

- a. Conditions (general, special, supplementary).
- b. Drawing and specifications.
- c. Addenda.
- d. Agreement form.
- e. Modifications.

The most important document from the legal point of view is the agreement. It is sometimes called the contract. Since so many documents are included as contract documents, the agreement is the better term for this particular one. The form of the agreement can be standardized and used for many projects, or a unique document can be prepared for each project. The standard form of agreement prescribed by the American Institute of Architects has proved to be satisfactory and has been used on many building projects with good results. The form followed for non-building projects is often more varied. Many agencies have own standard forms, which are used on all their projects. Information usually included in the agreement are of three parts. The first part is a short introductory paragraph which defines the parties, gives the date of the agreement, and state that each party agrees to what follows.



The second part contains the elements of contract and defines the work to be undertaken. The final paragraph confirms the agreement and provides space for signatures of the parties. Thus, the agreement usually composed of the following articles:

- a. A short introductory paragraph.
- b. Scope of the work.
- c. Time of completion.
- d. Contract documents.
- e. Performance bond.
- f. Contractor's insurance.
- g. Owner's insurance.
- h. Laws, regulations and permits.
- i. Payments.
- j. Extensions of time.
- k. Changes in the work.
- l. Owner's right to terminate the work.
- m. Contractor's right to terminate the work.
- n. Confirmation and signatures.

C. Conditions of contract

The conditions of a contract are rules by which the execution of the contract is to be governed. They set-out the responsibilities, rights, and liabilities of the two parties. They also set- out the actions to be taken by the parties if and when certain eventualities should arise. No two civil engineering contracts are similar. Probably, no two construction contracts are truly the same. Therefore, identical conditions of contracts are not likely to be required. However, for work of a similar type, certain conditions will apply for the vast majority of cases. It follows that a standard form of conditions for a given type of work will remove the necessity of thinking out and drafting new sets of conditions for every new contract. By taking the standard form and modifying it to suit the requirements of a particular contract, time and effort will be saved. The terms of a contract legally fall into two categories:

a. **Conditions:** They are terms expressing matters basic to the contract. A failure to perform the requirements of a condition is a fundamental breach of an essential obligation giving the aggrieved party the right to:

1. End the contract and claim damages, or
2. Continue the contract and claim damages.

b. **Warranties:** They deal with matters not of the essence of the contract, being subsidiary to the main purposes for which the parties contracted. An example of a warranty is where a nominated sub-contractor warrants that the work will be carried-out to specific standards. The conditions of a contract usually comprise the following:

1. A standard form of general conditions of contract appropriate to the natures of the work involved.
2. A series of amendments to the forging in order to adjust them to the circumstances of the actual contract concerned.
3. A number of special conditions, which deal with matters peculiar to the contract and not dealt with by the standard.

D. Standard (general) forms of conditions of contract

Standard forms are prepared jointly by professional bodies and organizations representing contractors or by large organizations and public bodies to suit their own circumstances. The intention is that a common approach by the parties to all contracts will be achieved and standard interpretations of risks and responsibilities involved. There are a number of standard forms of conditions of contract used in civil engineering. The most commonly used are:

Institute of Civil Engineering (ICE) Conditions of Contract: This document includes the forms of Tender, Agreement and Bond. It is applicable to all civil engineering construction works. It is particularly suitable for general civil engineering work which is predominantly either in the ground or in, or adjacent to, water, and cares for the attendant risks and claims situations. It is also used, sometimes, for building works and for mechanical and electrical works where such works are included in a civil engineering or building contract.

Federation Internationale Des Ingenieurs-Conseils (FIDIC): These conditions are, in effect, international versions of the ICE conditions to which they are closely related. The fourth edition (1987) of the conditions for works of civil engineering construction comprises:

Part I: General conditions with forms of tender and agreement.

Part II: Conditions of particular application with guidelines for preparation of Part II clauses.

It is intended for general use for works where tenderers are invited on an international basis, but it also suitable to domestic contracts. The objective is to provide a standardized document which is well-known, internationally recognized and accepted, an adequately reflects the interests of the parties concerned.

The standard (general) forms of conditions of contract usually cover the general aspects in arranged clauses. For example, FIDIC general conditions of contract comprise clauses that cover the following items:

- a. Definitions and interpretations.
- b. Engineer and Engineer's representative.
- c. Assignment and sub-contracting.
- d. Contract documents.
- e. General obligations.
- f. Labour, Materials, plant, and workmanship.
- g. Suspension.
- h. Commencement and delays.
- i. Defects liability.
- j. Alternations, Additions and Omissions.
- k. Procedure of claims.
- l. Contractors' equipment, temporary works and materials.
- m. Provisional sums.
- n. Certificates and payments.
- o. Remedies.
- p. Special risks.
- q. Release for performance.
- r. Settlement of disputes.
- s. Notices.
- t. Default of Employer.
- u. Changes in cost and legislation.
- v. Currency and rates of exchange.

Most of the standard forms of conditions of contract contain one or more clauses, which require completion by the Client/Engineer before the conditions are issued.

E. Special conditions of contract

Special conditions are new clauses to augment the general conditions of a standard form.

Usually they deal with subjects not touched on by the standard form. It is often simpler to introduce a special condition than to amend a standard form condition. After a new clause is written, it must be ensuring that no conflict or ambiguity is being introduced. The range of possible subjects for special conditions is large. They normally deal with the peculiarities of one contract and one site. There are varieties of choices in which a new subject may be written:

- a. In the specification (if it is of technical matter). As special condition of contract.
- b. In the site regulations (if it deals with site administration or discipline).
- c. In separate correspondence (if it is not essential to incorporate it into the formal contract).

The decision to consider a special condition does not depend on importance. The following are typical examples of subjects for special conditions:

- a. Special terms of payments.
- b. Patents and licenses.
- c. Applicable law.
- d. Official Language.
- e. Obligatory use of local labour, plant and material.
- f. Co-operation with contractor on site.
- g. Fair wages to be paid.
- h. Union membership of work force.
- i. Protection and disposal of historic, valuable, archaeological, etc. finds on site.
- j. Prohibition of access to named places.
- k. Restrictions on noise levels, dust, fire hazards, etc.
- l. Control of demolition work, explosives, etc.
- m. Responsibility for damage to public services.
- n. Responsibility for payment of local taxes.

F. Construction claims

A construction claim is a request for payment or time extension to which the contractor considers him/herself entitled. There are three types under which claims are required:

- a. Extension of time only.
- b. Additional cost.
- c. Both extensions of time and additional cost.

The main reasons for construction claims may include:

- a. Late possession of site or late provision of working drawings.
- b. Change of contract start or activities schedule.
- c. Design change and variation.
- d. Delays in approval and examining work.
- e. Work acceleration by the client.
- f. Late delivery of materials supplied by the client.
- g. Different ground and/or site conditions.
- h. Unforeseen events and disasters.

VII. SELECTION CRITERIA

Traditional selection of successful bidder is based on contract price of the project. The selection of the bidder can be based on lowest price bid, qualification based, qualification cum cost based, cost plus time based, lowest life cycle cost, period of contract, return from the project etc. Based on selection criteria the component of bidding i.e. mode, method and process are suitably modified to reduce the risk of subjectivity at the time of evaluation.

VIII. PROCUREMENT STRATEGY SELECTION MATRIX

After the detailed analysis & evaluation of various pros and cons with respect to modes, methods & processes a formal approach as suggested below (Figure-1) can be adopted for selection of optimal strategy. A suggestive comparison/matrix with respect to various issues for different modes of procurement is listed in table -1; similar matrix for method and process shall also be made as part of an iterative process to find final strategy.

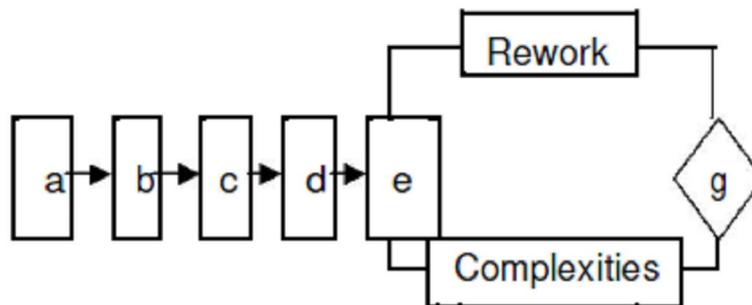


Figure-1 Procurement Strategy Selection Matrix

- a. Set Project Goal
- b. Assess the resources and capacity of the organization
 - 1. Technical
 - 2. Infrastructure
 - 3. Risk management capacity
 - 4. Staff experience etc.
- c. Project profile
 - 1. Complexity of project
 - 2. Schedule of completion
 - 3. Availability of designs
 - 4. Availability of supervision staff
 - 5. Innovations
 - 5. Availability of funds
 - 7. Availability of land & other Statutory clearances
 - 8. Major stake holders
 - 9. Project specific constraints 1, 2, 3,.....

- d. Do risk assessment [w.r.t. different mode/ method/process of procurement strategy]
- e. Can risk be shared/transferred/ allocated/ ignored
- f. Re-work on procurement strategy considering complexities of the project
- g. Final selection

IX. CONCLUSION

No single contracting strategy is suitable for every project. Each project should be critically analysed to determine the most optimal delivery strategy. It is requisite to map all the factors, Project goals, Procurement goals and institutional capacity available for a project.

TABLE 1- METHOD SELECTION CHECK LIST.

ISSUE	BIDDING METHODS		
	ITEM RATE	DESIGN BUILD LUMP SUM	MANAGEMENT CONTRACT
PROJECT DELIVERY SCHEDULE	If design is available, the time required for this procurement is short.	Design and construction are parallel activity, which accelerate the project delivery schedule, however procurement time is lengthy	Project development, design, procurement and construction, etc. Are parallel activity. Project delivery schedule can be slow due to coordination issues.
COMPLEXITY OF PROJECT	Complex design issues can be sorted quantitatively before hand	Contractor provides most economical innovative solution with alternate technical proposals.	It allows qualitative design with mutual consultations.
PREPAREDNESS OF DESIGN	100 percent in house design.	Design risk is allocated to bidder. Employee is to give only precise performance requirements.	In due course improvement in design is possible. However it may extend project schedule.
COST OF PROJECT	Competitive bidding allows a low cost. Cost accuracy is expected.	It is cost efficient. However poor risk allocation can result higher contingencies and improper risk loading.	It has flexibility of designing as per budget limit
RISK ALLOCATION	Quite Clear	Proper allocation of risk to the party best able to manage them. These risks are to be well defined to minimize contractor's contingencies on cost price.	Risks are collectively shared and minimizes loading of contingencies on cost price. But there is less competition
REQUIREMENT OF IN HOUSE STAFF EXPERIENCE AVAILABILITY.	Elaborate Technical design team is necessary	Elaborate Technical design and management team is necessary to develop RFP and subsequent monitoring.	Committed Technical design and design team is necessary with consultant
LEVEL OF AGENCY CONTROL	Full	Less	Collaborative effort
MARKET COMPETITION	High level Competition	Medium level Competition	Low level Competition

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