

Consulting and Contracting Practices in Pakistan

By

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PART I—CONSULTING PRACTICE IN PAKISTAN

1. Role of Private Consulting Firms in Modern Economy and Technology

Pakistan is a developing country and there is need of engineers in all the sectors of development. As we have a long way to go towards attaining our objectives and our resources are limited, we have to evaluate the available resources and ensure that these are utilised properly. The engineering talent is one of the resources.

A consultant can be defined as an independent, professional engineer who performs engineering services for clients on a fee basis. This definition is applicable to an engineer with a secretary as well as to a firm with a number of principals and hundreds of employees.

Consulting Engineers must be qualified by education and experience if they are to provide competent engineering services. The principals in the firms should be registered engineers. A Consulting Engineer has nothing to offer except his services, time, knowledge and judgment. He, therefore, can have no commercial affiliation with manufacturers, suppliers or contractors.

Any individual or organisation in need of engineering services may be a client. Consulting engineers may be engaged by individuals, industrial and commercial concerns, municipal and provincial or national bodies.

After defining a consulting engineer, we have to see where he comes from in order to understand the consultant's role in a modern economy and technology. The institution of the consulting engineers as we see it today is a relatively recent one. Initially the consulting engineer was an individual who by reason of academic achievement or experience had gained outstanding recognition in a particular field. His services were sought for the solution of a specific and usually complex problem. Gradually his services expanded. Today consulting engineers cover the full scope of engineering requirement and are practicing in every major field and every sub-division of these fields. This growth in fields of activities has been accompanied by a parallel growth in the number of firms and individuals engaged. Consulting engineering has been a rapidly expanding segment of the engineering profession. We have seen this growth in both

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wings of Pakistan and a similar phenomenon has taken place elsewhere in the world. In the United States of America, for example, the number of firms increased over hundred per cent between 1950 and 1960.

The scope of services available from the consulting engineer today is both broad and deep. Embracing all branches and sub-branches of the profession, its range of activities is impressive, extending from the original functions of consultation to investigations, feasibility reports, designs, procurement, construction supervision, testing, production engineering, evaluation and rate studies, surveys, operations, court work and various possible combinations of these activities. There are specialist firms who confine their work to specific activities within a specific branches; and generalist firms who are capable of performing in the full range and scope with multitude of variations occurring in between.

After we have discussed what a consulting engineer is, where he comes from, and what he has done, we may look into his role in the modern economy and technology. In the past 25 years, the world has seen a tremendous technological explosion which is altering the face of the planet and sending man off to survey the realm of outer space. There is no doubt this situation will extend into the next 25 years. A continued expansion in technical knowledge can be foreseen during the next quarter century and along with this more sub-divisions of engineering disciplines than now exist; concurrently there will be a parallel requirement of private consulting engineers in each of these areas. This is because the expansion of technical knowledge is so broad and its movement so fast that any engineer entity which intends to keep pace must inherently possess a dynamic adaptability. The private consulting engineering firm, more than any other, has this characteristic in a unique degree.

Everywhere we can see examples of the increased complexity of the modern technological society. In the interest of time, efficiency and economy, government and industry must continue to call upon the competent, impartial and informed private practitioner. The private firm has the capability of rapid expansion and, if need be equally rapid contraction. It can ensure a staff of the right numbers of competent engineers with the requisite skills. It can, because of its nature, go to the market and obtain these people and skills more readily than a governmental body with its rigid personnel policies and requirements.

No one agency or entity of business, industry or government, can afford to maintain on its staff competent engineers in all the disciplines, and in the numbers demanded by today's complex society. The role of the private firm is to meet these demands.

2. Professional and Management Problems involved in the Practice of Consulting Engineering in the Present Day Circumstances

The opportunities that are available to consulting engineering firms in Pakistan today also bring a variety of problems with them as companions. Not the least of these are professional and management difficulties posed by the great demand for trained and experienced engineers. The wide scope of activities being carried out in all sectors of the economy; the requirement to get works underway in a reasonable period of time and yet to have them adequately studied, planned, designed and constructed; the complex nature of many engineering problems, all present a need for the exercise of the highest level of administrative and managerial ability by the consulting engineer. The task confronting our new nation is a formidable one calling for imagination, courage and integrity in a large measure. The consulting engineer must carry an equitable share of the task with all the attendant responsibilities.

The problem on the professional side is finding properly trained and experienced personnel in sufficient numbers to staff the firm. Competition is keen among government agencies, industry and the private sectors for the services of the capable engineer. The individual engineer too, faces professional problems for he must keep abreast of an ever expanding technology while still meeting the demands of his daily tasks. An example of this can be found in the use of computers in engineering work. The use of computers is developing fast. Through their use, a vast increase in the amount and extent of data is available for the purpose of analysis. It can and has produced improved design concepts. Consulting firms must improve their professional competency to make use of this advancement. Electronic computing facilities will remove the drudgery of computation and give the consultant a broader base for creating engineering design.

Other examples of the need to seek and maintain the professional competence can be cited. New thoughts and theories are under constant development. The body of engineering knowledge has to be periodically renewed and to remain standstill is to go backwards. All these point to the need for constant improvement in professional ability.

The management problems of the consulting engineer likewise are of no small consequence. Indeed, managerial ability is as important as engineering ability for without the former, the latter can become inoperative or ineffective. The consulting firm must plan how to accomplish its projects and then organise, direct and control its activities to ensure that they are accomplished in a professional manner on a timely basis. This planning of activities extends beyond the internal operations of the consulting firm to planning and programming

projects for the client. Again, as an example, the requirement of professional competency is evident in order to provide the client with current developments and methods so that he too may properly manage his affairs. The complexity of directing and controlling programmes in the modern society has challenged conventional management techniques. There have been significant steps made toward integrated management systems encompassing the variables of time, resources, and technical performance. The private engineering firm must be capable of applying these developments to the problem or activities of the client. Two of these many new devices may be named, *viz.*, PERT (Programme Evaluation and Review Technique) and CPM (Critical Path Method). It may be mentioned here that one of the consultants to EPWAPDA is applying CPM on a problem involving design and construction of a power plant extension.

Included in managerial problems are the administration of personnel within the firm and the relationship with clients and others outside the firm. The calls for the use of skills and disciplines are beyond those learnt in the class room. As a consulting firm works for people and with people, it follows that a successful firm must have a reputation for fair dealings with its clients and with its own personnel.

In summary, the consulting engineer today is faced with a myriad of problems, only a few of which have been discussed here. These problems are on both the professional and the management side, and demand the highest type of competency. The firms which grow and progress in today's competitive world will be those who recognise and meet the challenge.

3. Engineering of Development Projects by Government Departments or Agencies versus by Private Consulting Firms.

It has already been noted how, initially, the Consultant was a specialist whose talents were confined to a rather narrow field. Projects, or planning for projects was done 'wintin' with personnel permanently assigned under the usual limitations of work load, budget, and personal allowances. Along with the growth in the private consultant's scope of activity has come the question of how much engineering should be done with assigned forces and how much to place with the private firm. This question is particularly pertinent to the public agencies for they conduct the major share of engineering works and employ the largest amount of engineering talent. By and large, private business and industry have neither the need nor justification for an extensive engineering staff. What then should be the distribution of engineering effort between the Government agency and the private firm? To answer this question, we may analyse the characteristics of each group.

Ordinarily, any single government agency has responsibility for a limited field of activity, *i.e.*, waterway development, irrigation, power development and so on. This tends to create specialists within a narrow or at least restricted area. The rather rigid nature of government employment policies restricts both increases and reductions in the personnel. Pay scales are relatively inflexible and certainly not quickly responsive to changed conditions. The very nature of government employment with its security features creates a conservative atmosphere and a noticeable lack of dynamism. It must be said, however, that devotion to duty, adherence to high ideals and perseverance towards a noble goal is the hall mark of the truly dedicated public servant.

As already stated the private consultant must be up to date in his professional competency if he is to remain in business. Actually, he is competing with governmental engineer groups for work as much as with other firms. His success depends upon his ability to offer services which exceed those of his competitors. He must either specialise beyond the degree of the competitor or else broaden his abilities to the point where he can provide a needed service.

The Consultant does possess one great advantage over the governmental group, *i.e.*, flexibility. He is free to select the discipline or disciplines he wants to cover and the depth to which he will go. He is relatively unencumbered in the matter of hiring or releasing personnel, limited only by the market conditions. He is not limited by political, geographic, or artificial boundaries. Frequently, however, the profit motivation appears to provide greater impetus than does dedication to high purposes.

Viewing these things in the balance, and certainly more could be said of both positive and negative weight in each case, one answer readily suggests itself. It must be agreed that the government department needs a core of career engineer employees, dedicated and equipped with the vision to plan the course towards the established goals. This hard core of engineers should be able to take care of the day to day or the 'normal' engineer work load. The unusual, or the highly complex, or the heavy peak load can then well be given to the flexible private firm, equipped by its very nature to do these very things. It may be said, however, that the points enumerated above may not be readily applicable in the conditions obtaining at present where expansion has become normal in a developing country like ours. The consulting engineer practice is not yet firmly established, and high caliber people will be required in the department to get the best out of consultants.

There is a place for each engineer group in the work which we must accomplish. We have to determine the right proportions and thus quickly advance to our objectives.

4. What should be done by Government and Others to promote the Development of Private Consulting Practice in Engineering

The economic development of new nations is straining the technological resources of the entire world. In the purely business field, pooling of resources within a related area to the mutual advantage of all has proved itself to be an answer to some of the problems resulting from rapid expansion. An example is the common market in Europe where free trade between countries permits interchange of needed materials and manpower. Another example is the recent effort for regionals co-operation for development between Pakistan, Iran and Turkey.

The economic boom has required expansion and excessive demands for trained personnel in financial, government, educational, agricultural, commercial and industrial fields. Each of these has a requirement for engineering services. In Pakistan, as in other countries, the need for communication facilities, utilities, water control, schools, hospitals, government and industrial facilities and buildings is an ever pressing one that will continue for a long time to come. The Third Five Year Plan facing us presents a still greater demand for engineering services.

Over one and a quarter billion people live in one hundred nations having an average income of less than five hundred rupees. This places a terrific load on the engineering profession. Pakistan is furnishing engineering services to some of the emerging new nations in Africa even as imported engineers are now serving our needs in Pakistan.

To develop this important segment of our resources—the engineering profession—every encouragement should be offered by government agencies. The East Pakistan WAPDA is doing this through utilisation of services of Pakistani engineering firms within selected engineering fields and within the capabilities of these firms to perform.

A key problem is the utilisation of available personnel in our technical institutions. They too are required to help meet the minimum targets of government agencies and their technical demand. But at the same time we must provide the technical training and leadership to our young men in colleges and universities. One way of improving the teaching in these institutions is to second the teaching personnel to established engineering firms in order to keep them abreast of the current developments in engineering. A similar policy may be adopted for engineers employed in government departments.

Private consulting services if adequately supported can help to meet local needs, develop local materials, and design the type of economic construction that only a well engineered job can produce. To encourage the private

sector of engineering, the resources of laboratory facilities, investigations data and techniques developed by government technical forces should be made available to the consulting engineer wherever possible.

Due to the regulatory limits of a public organization, personnel in government services are not exposed as rapidly as in private practice to the variety of challenges, the decision making responsibilities, and the individual association with experienced personnel as in a consulting engineering firm. Therefore, opportunity to broaden and develop ability is at a slower pace than in a smaller consultant organization. It is Government's responsibility to recognise and conserve the utilisation of engineering personnel through encouragement of the expansion of private engineering services both by consultant contracts and by limiting the demand for new engineers.

5. Need for an Association of Consulting Firms in Pakistan

In building public confidence in the services of a profession, such as the engineering profession, it is essential that the public know what qualifications are required of a consulting engineer, what is expected of him and how much will his services cost. Through an organised group that establishes a code of ethics and limits its membership to those with strict qualifying capabilities, the public can be assured that fees charged, services proposed and rendered will conform to the highest standards of a responsible profession.

An interchange of problems, both technical and administrative, is possible with an association of this type and can be beneficial to the client and protective to the emerging profession. It can provide a sounding board, so to speak, where mutual problems can be discussed in an unofficial, yet an authoritative manner.

Associations of consulting engineers exist in most of the more developed nations and are very useful in creating the necessary public image and establishing mutual confidence. There is no conflict between the purely technical societies whose membership include consulting engineers and the consulting engineers who associate for an entirely different purpose. For example, the institutes of specialised engineering, such as, civil, electrical, and mechanical, serve the consulting engineer with purely technical aid and data.

PART II—CONTRACTING PRACTICE IN PAKISTAN

1. Departmental Construction of Engineering Works versus Construction through Contracts

Prior to independence, the region now comprising East Pakistan was severely neglected in the matter of development. As a consequence, not many

local construction contractors have till now come up. Works have been done mainly as departmental construction and in some cases by foreign contractors.

East Pakistan's economy is primarily agricultural and in the past, sufficient food could be produced locally. The land was developed over the centuries as needed and in relatively small areas. The rains and floods furnished the moisture required to grow the crops—the flood waters enriched the soil, and a long-stem paddy was developed that grows while the lands are flooded. Although there were times of famine, generally there was sufficient food and the Province looked elsewhere for the other necessities of life.

With the population increase, however, the one-crop system has failed to produce enough food for the people, and a growing desire for a better standard of living has made a new way of life a necessity.

To feed the increasing population, to raise the standard of living and to afford a better opportunity for a full life for everyone, the Government of Pakistan embarked on its Five Year Plans.

A great deal has been done to date. Development programmes have been formulated and some have borne fruit but many are yet to be implemented. The need for construction contractors is being increasingly felt to carry out these development programmes.

It has been the experience of developed countries that construction of engineering works can be executed more expeditiously and economically by contract than by departmental forces. This may be attributed to the following reasons :—

1. Primarily the contractor is motivated by the profit possibility of his construction contract.
2. He employs his brain and capital to accomplish the work in the shortest possible time at the lowest possible cost.
3. He is able to offer incentives in the way of additional wage and bonus to workmen to encourage them to work harder and faster.
4. The contractor has a great deal of latitude in his purchase of materials and supplies as he is not restricted by departmental rules and regulations.
5. The contractor is naturally inclined to use greater ingenuity in his planning, since the reward for successful accomplishment is greater.
6. The contractor has the opportunity of working for more clients, and, therefore, can keep a nucleus of an organization gainfully employed and rapidly available.

There are, however, certain advantages in departmental construction of engineering works :—

1. The project is sometimes so large and of such extended duration that no contractor has the capability to handle it. It is of enough magnitude and duration for an efficient organization to be set up by the department.
2. The urgency may be such that there is not time to go through the formalities necessary to invite proposals and award a contract.
3. Required equipment may be available only from a Government Agency.
4. Some small projects do not lend themselves to awarding contracts for their construction.

2. Various Forms of Contracts and their Suitability in Particular Circumstances. Single Large Contracts versus Multiple Small Contracts

There are various forms of contracts. The following forms are the chief types of contracts :—

- (a) Unit Price Contracts
- (b) Lump Sum Contracts
- (c) Labour Contracts
- (d) Cost plus fixed fee contracts
- (e) So-called Target Estimate Contracts, with fixed fees and incentive bonus or penalty provisions.

(a) The unit Price Contract is a very favourable means of doing work when the units can be defined well enough to make an equitable and workable contract. The units may vary to a certain degree, but a variation of more than 25% on the lower side can cause damage to the contractor. The usual practice for the contractor is to spread his fixed costs over the unit price items and he is faced with fixed costs in excess of what can be spread to other items. On the other hand, if there is a large excess in an item, the owner is penalized, since the contractor receives compensation for fixed costs in excess of the actual costs. However, normally this form of contract is very satisfactory.

(b) Lump sum contracts can be sometimes advantageously used when the project is well defined. When there is little chance of any change in the quantity or the nature of work, this form of contract is easy to administer.

The scope of work must be prepared meticulously enough for a complete understanding between the contracting parties. The provisions must be such that any deviation from the scope can be readily and equitably adjusted.

(c) *Labour Contracts.* This form of contract is often resorted to where the owner has the equipment, materials, supplies and a supervisory staff, but does not want to employ the labour forces direct. This form of contract is especially used in East Pakistan where there is a plentiful supply of labour which should be utilised. It is simpler and more advantageous to contract with a person to furnish labour than to recruit, keep track of the man hours and provide supervision.

(d) Cost plus fixed fee type of contracts are often used when the work to be done is of such a nature that it is impractical to define the scope in enough detail to obtain quantities for a unit price bid or to define it sufficiently to enter into a lump sum contract. This often happens when the demand to start construction and get the project underway is of great importance. There are cases where the indeterminate nature of conditions is such that a unit price or lump sum type of contract is impossible to use. Such instances may be due to sub-soil conditions, climatic uncertainties, floods, materials and supplies etc. This form of contract may prove more economical since the risk connected with contracting is placed with the owner and a contingent addition which must be added to a contractor's estimates may be a saving.

(e) Target Estimate, fixed fee form of contract is quite similar to a cost plus fixed fee contract. The so-called target estimate is the difference in the two forms. In this type of contract, the contractor makes an estimate of the cost of the project and this estimate is agreed upon between the two parties. The cost estimate is used as a basis of settlement when the contract is completed. Should the contractor do the work for a cost less than the estimated cost, he participates in the savings by a percentage agreed upon in the contract. Likewise if the cost exceed the estimated one, the contractor participates in the loss by an agreed percentage. This form of contract gives the contractor a very definite incentive to operate as cheaply as possible to assure his participation in the savings. It forestals the criticism often made that a contractor has no incentive to operate economically on a cost plus fee form of contract.

All the above five forms of contract lend themselves to competitive bidding. The first three are forms that can be open to a proposal from a number of contractors and these proposals can be readily compared and the most attractive can be chosen to enter into a contract for the work. The last two forms of contracts are more applicable when there are a limited number of bidders or where a very responsible and capable contractor can be chosen and negotiated with.

Regarding the advisability of entering into a single large contract against dividing the work into multiple units and awarding a small contract for each.

There are advantages and disadvantages in either method. The single large contract should be the more economical since :—

- (a) The work is handled by a single contractor and his overhead should be less.
- (b) The single contractor is able to better co-ordinate all items for more advantageous use of equipment, labour force and in some instances materials and supplies.
- (c) The supervision and administration of a single large contract is simplified and should be more economical.
- (d) The period of construction should be of shorter duration.

The advantages of numerous small contracts in lieu of a single large contract are:—

- (a) The competition among contractors should be more keen as there are many more concerns. The danger of a large single contract is that as the number of individual contractors with enough equipment organization and capital to accomplish the work is limited, large contractors may be inclined to place a very high price on their work which may offset the expected economical advantage from a single contract.
- (b) It is often possible to schedule the work so that the project may be so phased that portions of the work may be completed more nearly as required with small contracts.
- (c) Perhaps the greatest advantage of the numerous small contracts is in spreading the work among a greater number of contractors. There is usually a public relations benefit in this.

In East Pakistan the advantage of numerous small contracts is especially evident as the need to develop contractors is critical.

3. Is Contracting an Industry? What are the present problems in the development of Contracting Practice in Pakistan? What should be done by Government and others to promote the development of Contract Practice in Pakistan?

Contracting practice is definitely an industry and often a large industry. A successful contractor has all the facilities of a successful industrialist. The Contractor must have equipment, organization, capital and credit in the same way as, say a manufacturer. Contracting is usually spoken of as the contracting industry.

The problems in the development of contracting practice in Pakistan are many, but are surmountable. The construction "know how" is an

essential requirements of contracting and is something that can be acquired in a brief time. "Know how" is short for the knowledge required to plan a construction project such as; plant, equipment, scheduling of work priorities, scheduling of arrival of materials and supplies, the necessary organization of competent personnel, the estimated costs and the capital requirements.

This "know how" can come only from experience that must be gained by actual operations.

The promoter of developing contract practice has the problem of choosing individual contractors who should be encouraged to develop and expand. An appraisal must be made of the individual's or company's integrity, responsibility and capability.

As has been stated already contracting is an industry and there is no reason why the contracting industry should not be subsidized in its development as is done for other industries.

A means of developing the contracting practice is through sub-contracts. The big established contractors should be encouraged to develop sub-contractors.

Reverting to the discussion on departmental *versus* contracting for engineering works, a very satisfactory method of developing contractors is for the department to act as the general contractor on a construction project and to sub-contract all possible works to contractors. By this system the small contractor can be furnished equipment, supervision and advice for his development. The government or government agency can observe the potential of the contractor who can be encouraged if he shows the proper qualifications. Larger assignments can be given him, credit can be extended to buy equipment, perhaps from the department. This encouragement of contractors may increase the cost, but this can be considered a subsidy in the development of contracting practice. Since profit is one of the motivating elements in contracting practice, the department must see that the developing contractor receives a just reward for his efforts.

Thus, by means of sub-contracting, by encouragement in the matter of a just return for efforts, the individual contractor can grow and at sometime, become capable of handling bigger contracts on his own.

4. Construction Contracts and Law

At the present time there is little uniformity in construction contract forms in the government or in private engineering practice. As construction phases increase in all areas of our development, the need for standardization becomes more apparent.

Basically this problem has been met in all countries and through model contract forms evolved by technical and construction associations, by governmental bodies and industry, a degree of consistent uniformity has been achieved. The complications inherent in contractual arrangements are recognized and provided for in two principal divisions of any agreement.

A General Conditions Section, such as in the model suggested by the Institutes of Civil Engineers and the Association of Consulting Engineers, the Federation of Civil Engineering Contractors of Great Britain, and similar models prepared by the association of engineers from sixteen countries called the Federation International des Ingeneurs with headquarters in Switzerland, illustrates the typical form most contracts assume. Such subjects as Definitions, Representatives, Sub-contracting, Limits of Contract, Documents, Obligations, Inspection, Damage responsibilities, Disputes, Changes, Labour, Materials, Time, Defects, Plant, Methods of Measurement and Payment are fairly uniform.

Similar models by American Technical Societies, Associated General Contractors and others basically treat these subjects in the same manner. Where local conditions vary from country to country such as security measures, labour laws, customs, imports and other local laws requires particular explanation, a Special Conditions Section containing clauses that modify or spell out detailed sources of materials, methods, schedules etc. may be included.

Following these sections, most construction contracts contain the detailed technical specifications and drawings all to comply with the General or Special Condition paragraphs of the Contract.

5. Administration of Large Contracts—The Problems and how they can be resolved.

Problems in construction arise from a misunderstanding of the contract caused by lack of ability and experience or poor planning, either on the part of the contractor or the engineer.

Frequently, the data or plans are deficient in detail because of insufficient study of materials to be used, local conditions encountered such as climate, or foundations. The contractor is often unprepared to take on a contract due to lack of organization, equipment, labour knowledge of the area or other reasons. These are problems areas for both the contractor and engineer to explore thoroughly preferably before but also during construction. Changes and agreement must be promptly decided with sufficient delegation of authority at both the contractor and engineer's local level to prevent delay.

Safety is a prime responsibility of the engineer and the contractor. Faulty construction can result in disaster to both. Safety should not be sacrificed

to speed—defective works should be corrected promptly and responsibility for the construction established. If design and specifications are not concise much delay and dispute can occur.

Planning ahead and adherence to schedule are major problems that engineers constantly face. Yet these must be solved and through careful inspection, it should be ensured that the intent of the designer is being met. To cite an instance, the collapse of a new building indicated that the reinforcing steel was more than sufficient for the load, but it was located improperly in the forms and its purpose was, therefore, not served.

A basic need is to keep our engineering know-how in pace with recent developments in such fields as new material usages for synthetics, metals and timber. Constant development in industry has changed the economics of such items, for example, drain pipes now are made of aluminium and plastics. Glass is now made of such strength and weight as to be treated as light metals. Advances have taken place in wood products, paints and preservatives. New methods of construction and new equipment are also to be considered where economics and scheduling are important factors.

Pakistani Engineers face more problems with less available means and manpower than any country of similar size and population. The future of the country hinges on engineering and its ability to utilise its available resources and to keep ahead of the problems that constantly change from day to date. It is this ability, coupled with a high standard of ethics, that will command the respect of people.

6. Pre-qualification of Contracts

Pre-qualification of contractors is quite important in developing a contracting industry. It is necessary to have sufficient information before proposals are invited to determine the capability of the contractor, his past experience and his responsibility and reliability.

In developing contracting practice, a very complete record should be kept of the performance of each contractor, which can be referred to and should become the best method of pre-qualification of contractors.

Such a record or register should be centrally located. This record should note all the observations by the supervisory staff of the contractor's work such as:

1. The quality of work performed.
2. The maintenance of construction schedule.
3. The co-operation with the supervisors and others.

4. The capability of the contractor to do the work contracted for and a recommendation as to his capability to undertake future larger and more complicated work.
5. The integrity of the contractor and his organization.
6. His financial responsibility and capability.

The evaluation of pre-qualification requires very sound judgment. This should be the function of a board composed of senior officers.

The register of contractors should be continually up-dated so that a current record of the performance of all contractors is available.