GEOTECHNICAL ENGINEERING PRACTICE : PROFESSIONALISM AND THE LAW

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SYNOPSIS : The practice of geotechnical engineering includes consultancy work as well as construction activities. The paper presents a discussion on what problems ail its practice, contract administration and its consequences as well as remedial legal measures as per the Indian law. The need for professionalism is emphasized together with an outline of the steps taken by ISSMGE and IGS on professional practice issues and suggestions on statutory recognition to resolve the problems.

INTRODUCTION

Geotechnical engineering practice includes :

- geotechnical consultancy : site investigation, field and laboratory testing, foundation design, professional advice etc; and
- geotechnical construction : this includes below-ground construction activities including piling, ground improvement, retaining walls, diaphragm walls, grouting etc.

In the current Indian scenario, there is only a thin line of difference between "contractor" and "consultant", particularly in the geotechnical engineering sector. Most geotechnical investigation works (which is a consultancy work) are administered as contracts awarded to a contractor. Hence, the problems discussed here may be considered applicable for both consultancy and contractor-ship.

THE CONTRACT

The Myth

Usually, the execution of civil engineering works is governed by a contract agreement between the client / owner and the consultant / contractor. The contract is supposed to clearly define the scope and stipulate what both the parties are supposed to do, what activities are to be done at what price, quantities of various items to be executed, the time schedule, the quality control and assurance and related parameters. The contract also deals with criteria for accepting the work and the responsibilities and liability of both parties.

The Reality

But in reality, the story is somewhat different. Often, there are various ambiguities and loose ends in contract documents which either party may interpret or misinterpret to their own advantage. In the modern era of the computer, contracts are usually prepared by "cut-and-paste" technology, editing previously made contracts without reviewing the repercussions carefully. The result is that certain clauses which were unintended or not applicable to the work to be executed, creep into the agreement.

It is not unusual to see a contract document with one clause contradicting the other. There may be instances where the contract document is silent on certain issues which are vital to the execution of the work or has details of unrelated work. Consequently, the contractor may refuse to do some work or claim extra payment or may be forced to perform certain works which were not really anticipated. Similarly, client may refuse to pay for a particular item or may release only part payment due to its own interpretation of what the contract reads. Extra items often cause the biggest point of difference between both parties.

The contractor is sometimes forced to sign the agreement if he wants the work; the client is not prepared to accept any condition or clarifications. Even points raised prior to submission of the tender are not replied to properly to the point. Some contractors, in their eagerness to clinch the work, do not read the contract clauses properly and cry foul later. In other cases, the contracts are signed in good faith; the problems arise because of different interpretations by the different parties.

The Remedy

When such differences occur, one party may claim breach of contract and go for a legal recourse as provided for in the contract. This may include arbitration or a court case. On major contracts of high value, both parties are prepared to fight the case. But in small contracts, either party may feel that it is not worth the effort to go for arbitration or court case.

The consequence is that one of the parties suffers at the cost of the other. The client may not be able to get the correct technical data that he was looking for; the contractor may not be paid as agreed for the services provided. Neither the injured/aggrieved party nor the party-at-fault get natural justice. There is no forum where such grievances can be redressed.

THE LEGAL OPTION

If the matter ends up before an arbitrator or in the Court of law to resolve the differences, the aggrieved party can expect justice only if he can prove a breach of contract and also substantiate the losses that he has incurred. Obviously, the party at fault has an equal opportunity to present his case. As is usual in such cases, the project suffers while the matter gets dragged on and on in the court.

A brief discussion is presented below on what constitutes a breach of contract as per the Indian law and what its consequences are.

Breach of Contract

A breach occurs where a party fails to perform his obligation under a contract (Sethi & Kumar, 1991). A breach of contract may take any one of the three forms, namely –

(1) Where a party fails to perform his obligation upon the date fixed for the performance of the contract; as is the case when a contractor does not complete the work within the stipulated time and does not have any justified reason for the delay / non-completion ;

(2) Where a party expressly repudiates the contract as where a party refuses to comply with the contract clauses;

(3) Where a party disables himself from performing his obligations; as where a client is unable to secure a license for blasting from the concerned authorities which may be required to be done at a dam site.

Consequences of Breach of Contract

Section 73 of the Indian Contract Act governs all cases of breach of contract, resulting in loss or damage to one of the contracting parties. Section 161 may be read as an expansion or illustration of Section 73.

When a contract is broken, the party who suffers by such breach is entitled to receive, from the party who has broken the contract, compensation for any loss or damage caused to him. The compensation is payable for the damage which naturally arose from such breach. Under the law, proof of damage is necessary to enable recoverability of damages.

Such compensation is not to be given for any remote and indirect loss or damage sustained. Also, the party claiming damages must do his best to mitigate his damages. The amount of damages to be awarded can never exceed the loss actually suffered.

There is no breach of the contract if the party has some justification for non-performance. A party to a contract may justify his failure to perform his part of it on any ground which existed at the time of his refusal or failure to perform it. The justification is a conclusion of law based on a given statement of facts.

NEED FOR A CODE OF CONDUCT

It is well know that arbitration and/or litigation is the last resort of parties involved in a dispute. The legal system in this country being slow and complex, it is best to resolve issues in a manner that avoids the delays and expenses involved in the legal wrangle.

It is in this context that a code of conduct can bring relief to the profession provided that all professionals abide by it. It has been universally recognized that the best form of control is self regulation based on moral principles. The code must induce a professional to follow it without the need for external pressure.

This raises three important questions :

(1) By what mechanism can competence and capability of a geotechnical engineer be evaluated before entrusting to him a high level of responsibility?

(2) What safeguards are available for protecting the interests of the owner/client?

(3) How to enforce accountability among practicing geotechnical engineers?

The Present Scenario in India

Let us look at the present status of geotechnical professionalism in our country. It throws up several disturbing facts as given below:

(1) There are several "so called" consultants in the country performing site investigations who are not even graduate civil engineers (leave alone post-graduation in Geotechnical Engineering) and/or do not have proper/standard field testing equipment, laboratory facilities etc. Yet these "quacks" manage to produce geotechnical reports advising their clients on several issues and even get away with it most of the time.

(2) To become a piling contractor requires no qualifications or capabilities whatsoever. Owning a tripod, auger and under-reamer can make you an under-reamed piling contractor. If you can invest a few lakhs, you can easily become a bored pile contractor. Several such contractors flourish in our country who are non-technical, have no understanding whatsoever of pile behaviour but continue to install piles with impunity in total disregard to quality and professional norms.

While Indian geotechnical professionals have contributed substantially to technical advancement and engineering excellence, precious little has been done to nurture the profession at grass-roots level. While the quality of research in our educational and R&D institutions is recognized worldwide as "among the best in the world", the quality of practice leaves much to desire.

The reason for this lies in the lack of interest among geotechnical professionals to take an active role in upgrading the standard and quality of practice. Most experts are content with advancing their individual professional standing/reputation or that of the organizations they represent.

Many of us have highlighted and criticized unethical practices in various forums, conferences, seminars etc., but no specific and real action has been taken to get to the root of the problem. As a result, vested interests lacking professionalism rule the roost in most tenders and contracts and works on project site are marred by compromises on quality, poor technical awareness and unethical practices.

It is amazing that many customers not only suffer on account of this lack of professionalism but there is also a distinct lack of awareness for the need for professionalism and quality. The shopping for

geotechnical consultants and contractors is very much akin to the shopping for fruits and vegetables. The lowest bidder is awarded the work irrespective of his capabilities.

Some big organizations / institutions do have a system of pre-qualifying their contractors – but usually a thorough in-depth assessment of technical capabilities is rare. The pre-qualification exercise is limited to financial aspects, turnover, number of works done, years of experience etc. (quantity is certainly assessed but assessment of quality is almost unheard of).

TC-20 ISSMGE

The International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) has constituted the Technical Committee No. 20 (TC-20) on Professional Practice. The thrust has been on consultancy practice only and no suggestions have been put forward for geotechnical construction activities. The Action Plan 1997-2001 has emphasized on the following issues :

- Interaction between clients and the geotechnical professionals.
- Need for guidance and support system for geotechnical professionals.

TC-20 has taken upon itself the responsibility of the preparation of guideline documents and action plan for the following issues :

- Promotion of Client Awareness
- Common Codes for Design and Practice
- Globalization of Geotechnical Consultancy
- Responsibilities, Liabilities and Insurance of Geotechnical Professionals.
- Case Histories of Professional Practice
- International Register of Geotechnical Professionals
- Continuing Education
- Cross-National Professional Practice

Role of IGS

The Indian Geotechnical Society (IGS) can take a leading role in generating a consensus for the need for a code of conduct. It can also exhort its members to practice it. But what is more important is to make the society at large aware of the code of conduct that may be proposed by IGS and induce them to accept it and enforce it.

The IGS sub-committee of TC-20 on Professional Practice has identified the following issues for study and adoption in the country.

a) Client awareness
b) Guidelines for practice in the profession
c) Scope of service of geo-professionals
d) Profession – academia interaction
e) Code of Conduct for geo-professionals
f) Education & training for technical staff & engineers
g) Compile a national register of geo-professionals

In an attempt to begin the implementation of these ideas, an invitation was given to all geotechnical professionals by IGS to fill in a proforma which can serve as the data base for compiling a National Registry of Geo-Professionals. The response has been poor; so for 36 organizations including 5 academic institutions, 7 government/ public sector organizations, 18 private companies and 6 individual consultants have come forward. This is an appeal to all geo-professionals committed to good professional practice to come forward to register themselves.

It would be necessary to screen these professionals and categorize them according to their technical capabilities, equipment base, laboratory facilities, financial strengths etc. Geo-professionals can then be accredited with IGS along with a rating. This should be taken up so that IGS can make the "National Registry of Geo-Professionals" a document which can be easily implemented by various client organizations. Thus, IGS can act as a voluntary regulatory authority.

It is also necessary to take further steps in tandem with ISSMGE objectives so that these can be implemented in the country. Proposals, suggestions etc. have come from various eminent professionals on how to go about it; it is now high time that action is concretized. Once the consultancy professional is regulated, the regulation of geotechnical construction may also be taken up.

It is an uphill task but not an impossible one – if honorable and the eminent members of our society are prepared to take up the challenge. The first step of course is to formulate a *document on professional practice* for practicing engineers as well as for clients. The next step is that of getting this implemented.

This may involve (among other things) the following :

(1) Interact with major government departments such as PWD, Housing Boards etc, public sector organizations, consultants/ architects, contractors etc. explain to them the advantages of implementation of such a code of conduct and other professional practice issues and generate a consensus for its acceptance

(2) Create an awareness among practicing professionals regarding the need for enforcing and following the code of conduct.

(3) Build up a hype of *"need for professionalism"* and thus discourage unqualified/technically incapable persons from practicing geotechnical engineering.

(4) Widely circulate the **"National Register of Geo-professionals"** along with the ratings to all client organizations and advise them to award works to various professionals as per their capabilities/ratings.

(5) Obtain feedback from various client organizations on the performance of the professionals and update the Register on a regular basis.

(6) . There is also a need to make clients aware of what he can expect from the geo-professional and the scope of his services. This will ensure that both sides are aware of what to expect from the other and thus ensure that the code of

STATUATORY RECOGNITION

Statutory recognition of the professional engineer is the logical conclusion to this effort of generating professionalism in the practice of geotechnical engineering. It can serve to recognize the capability of an engineer and also ensure professional standards.

The demand for statutory recognition is not new. Many countries such as USA, UK, Canada, Bahrain, Korea, Malaysia, Singapore and New Zeland have laws governing engineering consultancy and professionalism. In our own country, we have laws governing architects, doctors, lawyers and chartered accountants.

The Association of Consulting Engineers (India) had taken up an exercise of drafting an "Engineers Bill" in the early nineties, but it never took off due to various reasons. A revival of the idea that is responsive to the current industry demands with specific reference to the geotechnical engineering profession is necessary.

The problem with regulating the engineering profession is that while architecture, medical science, accounting etc. are all specialized fields, each with similar professionals, engineering comprises a wide spectrum of professionals in various disciplines ranging from computer, electronics, mechanical and civil engineering to aeronautics, nuclear science and space technology. It may require inputs from professionals of all these disciplines to generate a consensus on a law that addresses all issues. But a limited effort to regulate geotechnical engineering services is an urgent pressing need.

The exercise for legalizing recognition to engineers is a challenging one. It will involve more than just advancing the state of knowledge and research in the subject. It should take the form of a popular movement with IGS leading the uprising for quality in professional practice in order to become a success.

We should involve all professionals - *civil engineers, architects, industrialists, government and public sector officials and the private sectors* - generate a consensus and move towards legalizing the percepts of statutory recognition so that we may secure the sanctity of our profession for the future generations.

CLOSURE

With the rapid growth of professionals possessing varying expertise and dependability, and the increasing demand for quality and professionalism, it is essential that the interests of both clients and practicing engineers are protected.

Creating an awareness on the need for quality goes hand in hand with ensuring that those practicing in an un-professional manner are exposed and banished from the profession.

IGS can take a leading role in this direction by -

(1) educating clients on the need for professionals, what he can expect from a geo-professional and the value of quality;

(2) accredit and rate professionals according to their capabilities;

(3) act as a voluntary regulatory body in the practice of geotechnical engineering; and

(4) press for statutory recognition for geo-professionals.

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