

SOUTH AFRICAN ROAD FEDERATION
SYMPOSIUM ON THE PREPARATION OF CONTRACT DOCUMENTATION
AND ADMINISTRATION OF CIVIL ENGINEERING CONTRACTS
CHAPTER 14: SOME PRACTICAL ASPECTS OF THE ENGINEER'S FUNCTION

CONTENTS

	Page No.
1. CLIENT LIAISON	2
2. APPOINTMENT OF SITE STAFF	2
3. BRIEFING OF ENGINEER'S REPRESENTATIVE	2
4. CONTRACT ADMINISTRATION	3
5. SITE INSPECTIONS.....	5
6. COST CONTROL	5
7. GENERAL ADMINISTRATION	6
8. ON COMPLETION OF CONSTRUCTION	6

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AND ADMINISTRATION OF CIVIL ENGINEERING CONTRACTS

SOME PRACTICAL ASPECTS OF THE ENGINEER'S FUNCTION

In this chapter the “Engineer” is the project or controlling engineer in the consultant’s or client’s organization charged with ensuring that the day-to-day duties of the Engineer, as defined in GCC 2010 or FIDIC 1, are carried out. This individual must have significant experience in both technical and contractual matters but may find it necessary to draw on the experience and expertise of more senior members of the organization’s staff for guidance on various aspects. The comments below are written on the assumption that the Engineer is in a Consultant’s office but are equally valid, *mutatis mutandis*, for an engineer representing an Employer body.

1. CLIENT LIAISON

Clarify with the Client the nature, extent and frequency of the administrative duties. *[Note that the terminology is “Client” when referring to the agreement between the Consultant and the Employer and “Employer” when referring to the contract between the Contractor and the Employer].*

It is important that personal liaison should be maintained with the Client and an informal visit from time to time does much to foster goodwill. Obviously the Client is interested in his project and values information relating to the financial aspect of any special problems that may have arisen. A timely discussion often obviates possible misunderstanding and lengthy correspondence.

It is suggested that, after a first informal visit, the Engineer should write to the Client and advise that as arranged the Engineer will provide him with periodic progress reports which include clear indications as to whether the contract expenditure is departing from that reported to him when tenders were accepted, and if so why. Similar considerations apply to the completion time.

2. APPOINTMENT OF SITE STAFF

Arrange for nomination, approval, and appointment of site staff. Final proposals should be submitted to the Client before the report on tenders.

It is often useful to arrange for the Engineer’s Representative (or Engineer’s assistant in FIDIC 1 terminology) (referred hereinafter as Resident Engineer – ‘RE’) to be appointed a week or more in advance of his being required on site to enable him to spend time in office with the design staff familiarizing himself with the job and for a week or more after the issue of the Certificate of Completion to finalize outstanding details. Clients should be advised of the need for the Resident Engineer’s appointment to begin before and end after the construction period.

3. BRIEFING OF ENGINEER’S REPRESENTATIVE

The Resident Engineer (RE) must be fully briefed before he takes up his position on Site. Important points that must be dealt with, generally in writing:-

- (a) Establish clearly what his powers are. Ensure that they are communicated to both him and the Contractor.

- (b) Issue standard and special lists of duties.
- (c) Point out special features of the design and site conditions that need careful attention. (Keep a special file during development of design for “notes to RE”).
- (d) Define the procedure to be followed in the measurement of the work and the calculation of quantities and give him a copy of the calculations of quantities for the original Schedule of Quantities.
- (e) Agree the format of the monthly measurement statements with the RE and the Contractor and/or make an electronic version of the Schedule of Quantities available to the RE for use in an approved Contract Administration programme.

4. CONTRACT ADMINISTRATION

Administer all contracts in the project, and in particular deal with the following:

- (a) Arrange for the contract agreement to be prepared and signed.
- (b) Except where specifically instructed to the contrary, carry out the duties of “the Engineer” in terms of the Conditions of Contract.
- (c) In dealing with the Contractor’s programme consider the possible implications of weather conditions.
- (d) Ensure that complete drawings and instructions are issued to the Contractor. The RE should be required only to deliver, not to interpret, not to amplify and certainly not to amend them. Keep a record of all drawings and bending schedules issued to the Contractor.
- (e) Ensure that all details of temporary works are finalized and agreed early so that the Contractor’s programme is not delayed.
- (f) Initiate the mandatory procedures in the contract for sampling, testing and approval of materials, ready-made elements, mix designs and approving of Contractor’s drawings and calculations where appropriate. Do not however undertake detail work which is not properly the duty of the RE.
- (g) Ensure by regular inspection that the Contractor is observing reasonable safety precautions with particular reference to responsibilities in terms of the Occupational Health and Safety Act and is also complying with environmental controls.
- (h) Carry out a thorough check on Contractor’s monthly claim for payment as approved by and reflected in the RE’s progress statement. Factors such as errors in arithmetic, unexplained variations compared with schedule, and validity of including items of work must be watched. Investigate discrepancies between scheduled quantities and actual quantities and agree what “amended quantities” may be shown in future progress statements.

Issue payment certificates based on the “Progress Statement” received from the RE and the Record of Escalation Calculations. The Engineer’s “Payment Certificate” records must include supporting schedules for each of the items named in the Payment Certificate in order to comply with the paragraph at the bottom of that Certificate. The Progress Statement need not be attached to the Payment Certificate unless required by the Employer.

- (i) Arrange to receive, with the minimum delay, copies of site instructions issued by RE, and check them.

- (j) Amend designs as necessary to suit conditions revealed on site.
- (k) Issue variation orders after obtaining the Employer's approval, and evaluate variations or fix rates.

Where variations in quantities or the nature of an item may lead to the Contractor's claiming amended rates or amendment of the contract price, the Employer must be warned in advance, so that consideration may be given to avoiding such variation.

- (l) Investigate and react to claims.
- (m) Receive the Contractor's monthly list of claims and give rulings (in terms of GCC 2010) or determinations (in terms of FIDIC 1).

The Contractor must be required to state in writing the grounds for his claim and to provide all the data necessary to evaluate his claim, and the RE should be required to verify the data on site, so that work which should be done by others is not unnecessarily carried out in the Engineer's home office. Unless there are clearly no grounds for the claim, where the data provided initially is inadequate in the opinion of the Engineer, he should explain his reasons clearly to the Contractor and endeavour to persuade the Contractor to provide more adequate data to the RE as quickly as possible. Rejection "on principle" and frequent returning of "claims for more information" are undesirable because they waste time. (See Para. 6(e) below).

It may sometimes be advantageous to discuss claims with the Contractor's management in the "home" office, to be able to form a more detached view than can be formed on site. Bear in mind that the Engineer has to go through a process of consultation with both the Contractor and the Employer when reviewing any claim from the Contractor.

When necessary, problems relating to disputes, claims and interpretation of documents should be discussed with senior staff.

- (n) See that suitable progress reports are received from the RE and supply Employer with such reports as he requires. In particular the Employer must be warned of possible increases in cost. In preparing these reports the opportunity should be taken to remind the Employer of variations approved and variations likely to be required in the future. (See (j) above).
- (o) Where appropriate, and at an early stage, make arrangements for a photographic record of construction progress – possibly even supplementary to any record the Contractor may be required to provide in terms of the Contract. Photographs are a valuable aid in recording defects, settling claims, reporting on past events and for general instruction purposes. With the availability of digital cameras it is extremely easy to "time-date" any photographs that are taken.
- (p) As soon as possible after the acceptance of the tender deal with items covered in the Schedule of Quantities by provisional and prime cost sums, taking cognizance of any input that may be required from the Employer.

Either:

- (i) give the Contractor a detailed specification (and drawings if necessary) of what is required and instruct him, in writing, to obtain three quotations and submit them to you; or
- (ii) call for quotations or invite informal tenders from at least three specialist firms or
- (iii) take similar action to (ii) above by inviting public tenders.

Analyze tenders received, select the successful tenderer and obtain the main contractor's agreement to a recommendation to the Employer for formal ratification.

- (q) Issue Certificate(s) of Completion and Final Approval Certificate (GCC 2010) or Taking-Over Certificate(s) and Performance Certificate (FIDIC 1) and organize return of Deed of Suretyship by Employer to the Surety through the Contractor. It is an important function to issue these certificates when they are due. Failure to do so can have serious contractual implications.

5. SITE INSPECTIONS

Do a site inspection at least once a month and attend site meetings with the RE, the Site Agent and other relevant persons.

When on site, attention must be given to the following:

- (a) Ensure that the RE is carrying out his instructions, is interpreting the contract documents correctly and is maintaining records as instructed.
- (b) Ensure that the RE is measuring the work correctly, and is recording the measurements and calculation quantities in an approved form.
- (c) Clarify standards of acceptance by specific examples on site.
- (d) Deal with queries from the Contractor which fall outside the authority of the RE, referring these to senior engineers where warranted. Where an Engineer's ruling (or determination) is required as a formal decision in terms of the contract, this must be given by the Engineer as defined in the Contract.

6. COST CONTROL

Control office costs on the project.

The costs of contract administration often far exceed the 25% of the fee earned on this stage of the project and strict control of expenditure is essential.

Common causes of excessive expenditure are:

- (a) Over-frequent visits to site. Site staff should be given clear directives on standards and policy and, as far as possible, left to apply them.
- (b) Persistent and unnecessary referral of minor site problems to Head Office. The Engineer should encourage the RE to accept responsibilities within the terms of his authority to the extent of the RE's competence.
- (c) Unsatisfactory or incomplete work in design stage, requiring disproportionate effort in construction stage to correct. Insist on design work being properly thought out and detailed in advance, based on adequate surveys and investigations. Design problems must be referred back to the design engineer for resolution.
- (d) Work being done by head office staff which is properly the duty of site staff, e.g. survey for measurement and checking purposes, measurement, inspection, testing. Arrange for adequate and competent site staff to be appointed, or arrange for them to be supplemented by head office as an additional duty.
- (e) Excessive time spent on evaluation of claims. Ensure that contract documents are clear, appropriate and complete. Ensure that the duties of the Engineer and the RE are properly carried out.

It is essentially the Contractor's responsibility to fully document and substantiate his claims, and the RE's responsibility to check out the facts of the claim on Site. Arrange for Contractor and site staff to provide all necessary data so that a decision can be taken on the basis of their assembled evidence.

- (f) Extended construction period. This usually warrants claims for additional administration and other duties, the Employer being recompensed by application of the penalty clause (GCC 2010) (termed 'delay damage's in FIDIC 1 and any claim by the Employer in this regard must be presented as an Employer's claim, to be determined by the Engineer).
- (g) Additional monitoring required to correct the Contractor's failures.

7. GENERAL ADMINISTRATION

- (a) Arrange for fees and reimbursements to be claimed.
- (b) Arrange for the RE to submit marked up "record" prints as the work depicted on each drawing is completed, and have completion drawings prepared.

8. ON COMPLETION OF CONSTRUCTION

Any operating or maintenance instructions that may be necessary must be supplied to the Employer before he takes over the Works, i.e. before issue of the Certificate of Completion (or the Taking-Over Certificate). This is obviously very important in the case of any mechanical or electrical plant.

On completion of construction and before the RE moves away, obtain from him, the final records of measurements, quantities and "record" data. These records must be clear and complete and incorporated into the project files.

As soon as possible after the Certificate of Completion (or Taking-Over Certificate) has been issued, and at very least before the Final Approval Certificate (or Performance Certificate) is issued, submit to the Client a report on the contract and a set of record drawings.

A revised Schedule of Quantities (i.e. a final measurement), complete as far as possible, should also be issued with the certificate of completion.