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7 PROJECT MANAGEMENT

7.1 INTRODUCTION TO PROJECT MANAGEMENT

Organisations such as ERA tend to let one or more contracts for every project which they wish to implement and, as a result of this they tend to refer to the administration of contracts rather than the administration of projects. In the case of road projects, ERA would normally have at least two contracts for each project i.e. the Supervision Contract and the Construction Contract. There could, however also be separate feasibility study, environmental impact study and design contracts. For this reason it would be better to refer to Project Management (including all its associated contracts) than Contract Management or Administration.

For the purpose of this document Contract Administration, Contract Management, Project Administration and Project Management are considered to be synonymous.

7.1.1 What is a Project?

The guide to the Project Management Body of Knowledge (PMBOK) was prepared by the Project Management Institute (PMI) in the United States after worldwide consultation. This guide defines a Project as

"A temporary endeavour undertaken to create a unique product or service".

The use of *"Temporary"* means that every project has a definite beginning and end and the use of *"Unique"* that the product or service is different in some distinguishing way from all similar products or services.

Projects have very wide applications. While the term is commonly associated with building, engineering and construction work a project can involve the creation of a nonmaterial object such as computer software, or a special report to management, and may involve the provision of a service such as design work and investigations.

Projects may:

- be undertaken at all levels of an organization
- involve a single person or many thousands
- require very many or only a few hours to complete
- involve a single unit of an organization or cross organizational boundaries, as is the case with ERA projects

7.1.2 What is Project Management?

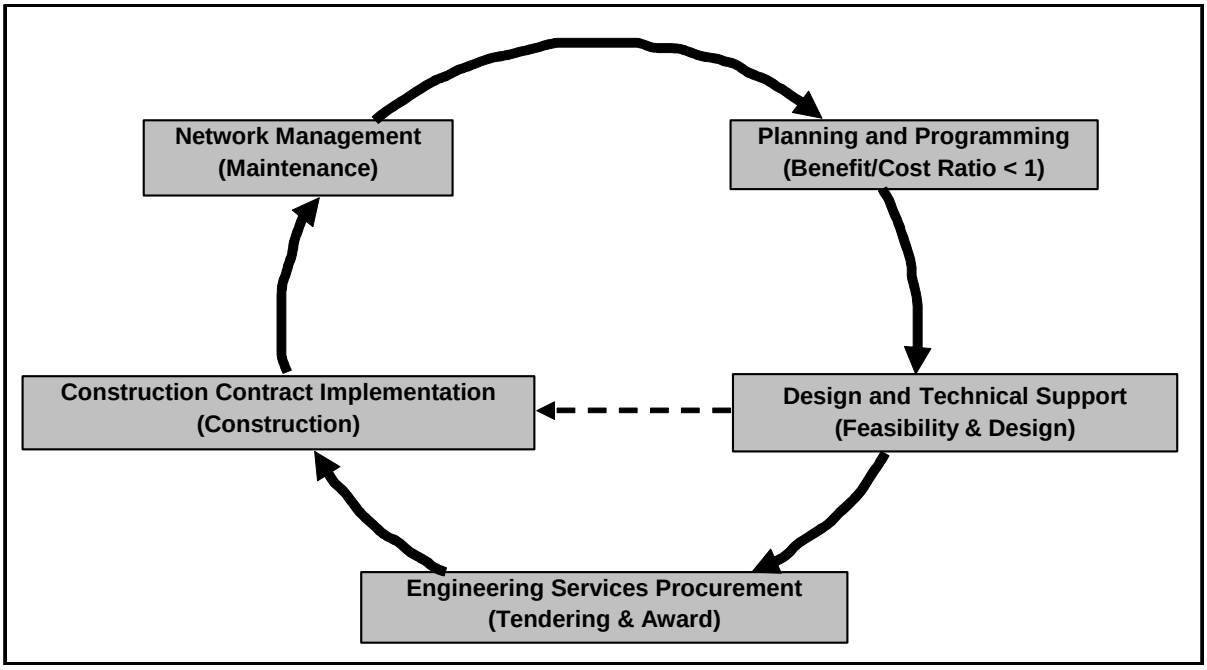
The Guide to the PMBOK defines project management as follows:

"The application of knowledge, skills, tools, and techniques to Project activities in order to achieve a project's predefined objectives."

There is, therefore, no short cut to or magic formula for achieving a well managed project. According to this definition Project Management is achieved by applying ones knowledge and experience of technical and contractual tools to the analysis and solution of problems, which present themselves during the implementation of a project.

7.1.3 The Project Cycle

The concept of a project cycle *(as opposed to the Project Management Cycle introduced below)*, as demonstrated in the diagram below, has previously been discussed. For the purposes of this presentation and in recognition of ERA's compartmentalised nature one could consider the work undertaken by each Branch as a Sub-Project of the whole Project. The issues implicit in the management of the Sub-Projects of Network Management, Planning and Programming, Design and Technical Support and Procurement are being addressed separately either by SMEC under separate headings or by SPAN under their consultancy. For the purposes of this presentation Project Management will be restricted to the Sub-Projects undertaken by the Construction Contract Implementation Division i.e. the Management of the Supervision and Construction Contracts by ERA.



The management concepts and recommendations presented below are equally applicable to small Sub-Projects (e.g. a tender process) and large and complex projects (e.g. construction of a power station or the RSDP as a whole)

7.1.4 Project Characteristics

A project generally has the following characteristics:

- A Defined Goal- The purpose and required outcome of the project must be defined;
- Different Activity Types- Must be defined and necessary resources allocated;
- Sequential Activities- These require their start and end times to be defined;
- Finite Lifespan- The project is completed when the defined goal has been achieved;
- Resource Utilization - The necessary resources must be allocated
- Goal Evaluation - Completed project vs. Defined goal defines the project's success.

7.1.5 A Project Management Control Cycle

The project management control cycle which is frequently used to provide a clear framework within which the management process can take place normally comprises the following:

7.1.5.1 Establish a Management Plan

The first step in any management process is to clearly identify a management plan. The management plan comes from considering all the facts and all the possible options, together with the desired objectives, and adopting the course of action that will most effectively and efficiently achieve the required objectives within the limits of the resources allocated for the project. (Usually one of the clearly stated objectives is to minimise the resources of time and cost.) Establishing the management plan is what the planning process is all about.

a) *Defining Objectives.* The activities needed to define the objectives are:
- Determining the end user's requirements;
- Formulating a statement of those requirements;
- Checking that statement with the end user;
- Listing any restrictions and limitations of a technical, social, environmental, political, financial or legal nature;
- Examining the objectives critically to determine whether all are necessary, that none overlap or are incompatible, and carrying out any cost-benefit analysis and similar studies.

b) *Determining Project Management Steps.* Determining the steps to achieve the given goals requires:
- Carrying out any feasibility studies;
- Carrying out any additional technical investigations;
- Carrying out any value management or value engineering studies of various alternatives;
- Determining an overall strategy to achieve the particular goals required;
- Preparing an approximate estimate of costs;
- Preparing an approximate program of work;
- Analysing and redefining the steps needed to complete the works;
- Documenting the steps necessary to execute the work.

c) *Preparing Schedules*. The activities required in the planning and scheduling of the project include:
- Preparing a program of the work to be completed;
- Preparing a schedule of the activities necessary;
- Determining any significant time restraints;
- Establishing cash flow predictions where applicable;
- Preparing staff and resource histograms;
- Modifying the initial plan to optimise the use of resources, the project cash flow, capitalised interest charges, and to take into account any constraints;
- Preparing a refined schedule of activities;
- Establishing a flowchart of information to record whom is to be advised of what.

d) *Allocating Resources*. The resources required on a project are determined from the programming and scheduling stage described above. Providing the necessary resources may require:
- Arranging finance and reviewing resources with regard to the revised schedule of work;
- Preparing specifications, drawings and other technical documentation as necessary;
- Arranging for the quotation and supply of goods and services;
- Arranging for the transport, storage, delivery and installation of plant and equipment.

7.1.5.2 Implement the Management Plan

The next step is to implement the management plan. This is putting into practice the agreed management decisions, using all the necessary resources, organising them and directing them effectively and efficiently.

a) *Supervising Staff.* The staffing activities necessary on a project may include:
- Evaluating staff needs from the program of work and schedule of resources;
- Arranging for an organisation chart and job descriptions to be prepared;
- Arranging to hire or second staff as appropriate;
- Providing for the administration and supervision of staff as necessary;
- Providing staff resources, tools and equipment, desks, computers, etc;
- Arranging for the induction and training of staff.

b) *Supervising Implementation*. The implementation of the project may require:
- Arranging for a monitoring system for monitoring progress vs. program;
- Arranging for a monitoring system for monitoring costs vs. budget;
- Arranging for a quality assurance system to ensure satisfactory quality of work;
- Arranging for a follow-up and expediting system to be established to provide progress reports to management as appropriate;
- Arranging for any statutory approvals to be obtained;
- Providing for risk analysis, risk abatement and risk transfer;
- Ensuring that all insurance provisions have been allowed for;
- Providing directions for the execution of the work.

7.1.5.3 Monitor and Control the Management Plan

The third step is the monitoring and controlling of the management process. This entails the constant checking of actual progress and the comparison of it with the progress planned in the management plan. The best executed plan and the best decisions are of no benefit if not properly implemented and controlled. Controlling the management plan involves identifying actual progress, comparing this with planned progress and correcting the variances.

7.1.5.4 Remedial or Corrective Action

The fourth step is the remedial and corrective action to bring what is occurring back in line with the originally intended management plan. If potential cost overruns or time delays have been identified (where the objective was to complete the project on time and within budget) management must take the necessary steps to bring actual costs or progress back in line with what was intended. Management must use all of its creative thinking ability and problem solving ability to be effective. *Effective management is about achieving results, not just planning for results.*

It goes without saying that the best controls in identifying variances from plan are of absolutely no benefit if management does not have the skills or ability to formulate and then implement remedial action to correct the variances. Once the variance is identified, management must quickly and decisively identify all possible options for taking remedial or corrective action. Of course, the optimum solution cannot be adopted if it is not included in the options to be considered. All options must be considered carefully and none rejected until the analysis is complete.

Any corrective action must, of course, take cognizance of the project objectives and the strategy embodied in the management plan. The correct decision requires a broad understanding of the problem, the project and its wider implications. The inability of management to identify variances and to react accordingly is the biggest omission and failure in otherwise successful organizations. *The ability to react and to affect the future outcome of any project is the truest measure of the success or otherwise of the project manager.*

Where engineering organizations for particular projects have failed in their objectives, experience has shown that the major cause of the failure is the adequacy of management reporting systems and, perhaps even more so, the inability of project managers to make the necessary decisions for remedial or corrective action at the time required.

7.1.5.5 Amend the Management Plan as Necessary

The fifth step in the process involves the amendment, where necessary, of the original management plan. The remedial action may have correctly identified that the optimal solution to a potential cost overrun is to amend the design, or perhaps to seek additional funds to cover such cost overrun. It may be that an expected time overrun can only be corrected by the massive injection of additional resources, with a corresponding increase in cost, or the correct management decision may be to keep the cost minimized but allow some extension of time for the project. The management decision may require the amendment of the original management plan to accept changed resources of cost or time.

The project management control cycle requires managers to actively formulate a management plan, to implement this plan, to monitor and control the plan and take remedial or corrective action where necessary to achieve the plan. If changing circumstances require amending the original plan in light of better or more accurate information, then this must be implemented. But the amended plan must then go through the management control cycle as the base for future comparison of actual and planned progress. Any changes to procedures necessary to ensure more effective management of future projects should be recommended.

7.1.6 Leadership and Project Management

Engineering project management teams operate under much greater constraints than do most teams within the ambit of general management. These constraints include the following:

- The goal or goals must be defined with accuracy and rigour rarely required within general management.
- Time constraints are of the essence, and therefore efficiency and effectiveness must be of an unusually high order.
- These time efficiency and effectiveness pressures can place engineering teams under a degree of psychological stress not commonly found in general management.
- All these constraints are frequently exacerbated by the team not having worked together before or not having tackled a similar problem before, or at least having to absorb new members possibly representing unfamiliar disciplines or work skills.

Whereas ineffective teams break down for almost any number of reasons, effective teams tend to be similar to each other. The cliché a “well-oiled machine” implies a number of virtues, including:

- Excellent communication concerning information which is both job relevant and more general information regarding the operation.
- Incessant consultation between members and the team leader and between members themselves.
- Mutual respect within the team concerning the skill and work value of all the members. There is an underlying assumption that there are no second class members of the team, irrespective of discipline.

7.1.6.1 Authority, Responsibility and Accountability in Management

The terms **authority, responsibility** and **accountability** are of great significance in any discussion on management structures. The terms can be defined as follows:

- **authority** is the **power** possessed or invested in any one person (group) to make final decisions that others on a lower level of the management structure are required to accept and act upon
- **responsibility** is the obligation of a person (group) which results from his formal position (role) in the management structure to perform assigned tasks effectively and efficiently
- **accountability** is the requirement of a person (group) to be answerable for the satisfactory completion of tasks which have been delegated to him

Hence within any management structure, a certain task is assigned to a particular person (group) who is therefore also charged with the responsibility of completing that task.

In order to allow for completion of the task the person is invested with a certain amount of authority commensurate with the power he/she needs to acquire, control and direct the resources required to complete the task. This may involve assigning the task or parts of it to others.

The individual however remains accountable to the person who assigned the tasks. Accountability cannot be delegated. Attempts to delegate accountability result in management's abdication – not delegation.

7.1.7 Project Management Areas

The PMBOK defines nine distinct "knowledge areas" which need to be managed in order to ensure successful management of a project. These are the following:

- Integration Management - coordination of the various project elements
- Scope Management - maintenance of the project within its original scope
- Time Management - maintenance of the project within its original time frame
- Cost Management - maintenance of the project within its original budget
- Quality Management - ensuring that the project satisfies its intended needs
- Human Resource Management - making the most effective use of project personnel.
- Communications Management - ensuring timely and appropriate generation, collection, dissemination, storage and ultimate disposition of project information
- Risk Management - definition and mitigation of project risk
- Procurement Management - most efficient and economical acquisition of goods

The key project management knowledge areas are those of scope, time, cost and quality.

7.2 PROJECT MANAGEMENT - GENERAL ISSUES

The issues raised in this subsection apply both to supervising engineers managing contracts on behalf of a principal, and to project managers for the contractor.

7.2.1 Accountability

Accountability is essential in contract management. One individual on the principal's staff must be appointed as superintendent to supervise the contract and liaise with the contractor. Correspondingly, a contract manager must be appointed by the contractor, as usually required by the conditions of contract, to head the contractor's team and to liaise with the principal. Ideally, all contractual related communications should take place between these two individuals. Responsibility for the administration of the contract must not be diffused through the two organizations.

7.2.2 Commencement

At the earliest possible stage, preferably prior to the placement of the contract, the principal's staff must arrange for prompt commencement of the work. They must also press the contractor to commence promptly. Time lost at the initial stage of a contract is almost impossible to recover. The contractor should start work as soon as practicable and apply the maximum resources compatible with effective work. The maxim "Hit it early and hit it hard", applies.

7.2.3 Communications

Contract management depends upon a systematic exchange of technical and commercial information. Regular, formal meetings between the principal, and the contractor should be organized to achieve this, supplemented by informal meetings and discussions. The contractor should be instructed to keep the principal advised of all significant issues which develop on the contract.

7.2.4 Consultants

Where consultants are employed, whether by the principal or the contractor, they must be selected, supervised and monitored with the same care as any other contractor. Clear comprehensive briefs must be issued.

7.2.5 Contract Controls

Effective contract controls are essential for both the principal and the contractor. The important variables on a contract are:

- Cost;
- The scope and quality of work;
- The program or completion date of the work.

Successful completion of the contract depends upon establishing control systems to monitor costs, quality of work and progress of work as the contract develops. All deviations from requirements must be corrected promptly.

7.2.6 Contract Documents

Both the principal's staff and the contractor's staff must be completely familiar with all aspects of the contract. This includes the general conditions of contract, the commercial conditions, and the technical specification and drawings. The maxim, "Know the contract", applies.

7.2.7 Cooperation

As far as possible the principal and the contractor should maintain a cooperative, rather than a confrontational relationship. This is particularly important in highly technical work where both parties must work together.

7.2.8 Coordination

Effective procedures for coordination between the principal and the contractor must be established at the commencement of the contract, this best done at a regular formal coordination meetings. If the principal fails to do this the contractor's staff should press for coordination meetings.

7.2.9 Documents and Records

Accurate documentation of the contract is essential. Every communication of significance between the principal and the contractor must be committed to writing, signed and dated. This ensures clarity and provides a permanent record should there be a subsequent dispute. It is also a requirement of most standard forms of contract. Where the communicator fails to do this, the recipient should confirm the oral communication in writing. The principal's staff, and the contractor's staff, must "Put it in writing."

7.2.10 Disputes

Disputes will almost inevitably develop between the principal and the contractor. These must be resolved where they occur and when they occur rather than being allowed to develop and damage the working relationship between the two parties. Where possible, disputes should be settled by negotiation[1]. Alternatively, mediation[2] or conciliation[3] may be appropriate. Arbitration[4] and litigation[5] should be avoided where possible. Disputes and their resolution are covered in depth in the Claims Manual prepared under the same assignment as this manual.

7.2.11 Expediting

Prompt follow-up and expediting are essential in contract management. The principal's staff, and the contractor's staff, must follow up every activity on the contract. Where activities fall behind program, or show a tendency to fall behind, prompt expediting is essential.

7.2.12 Initiatives

Taking initiatives is essential in contract management. The principal's staff, and the contractor's staff, must cultivate an attitude of anticipating what actions are required, thinking the actions through and taking necessary steps, rather than passively allowing events to impose their own logic. "Either you run the contract, or the contract runs you."

7.2.13 Interfaces

Interfaces are critical on technical contracts. Physical interfaces on contracts are among the most sensitive aspects of the work and must be checked at every stage from planning to commissioning. Physical interfaces occur typically at pipe work connections, foundations and on structural work. Contractual interfaces, where the work of different parties is coordinated, must be checked with the same care as physical interfaces. Where possible, the number of physical and contractual interfaces on a project should be minimised.

[1] Negotiation - agreement by discussion
[2] Mediation - facilitation of a settlement deal by a third party
[3] Conciliation - determination of an evaluated settlement deal by a third party
[4] Arbitration - imposed settlement by an impartial third party
[5] Litigation - imposed settlement by law

7.2.14 Planning

Planning is essential for effective contract management. A realistic plan for executing the work must be agreed between the principal and the contractor prior to commencement. Progress must then be regularly monitored against the program. Effort invested in planning is cost-effective for both parties in reducing problems, cost over-runs and disputes.

7.2.15 Time Control

Almost invariably, time is the most critical resource on any contract. Hence, the principal's staff must on all occasions check the time available for every activity. They should also be aware of the financial implications of time over-runs and program changes. Any change to the time aspects of an activity may affect the cost. Any change to the cost or scope of an activity will almost invariably affect the timing. Time and cost are interdependent.

7.3 CONTRACT ADMINISTRATION MANUAL (CAM)

The establishment of a complete contract administration system at contract commencement is one of the most invaluable tools available for efficient and effective project management. A manual covering contract administration needs to be produced to clearly set out who does what where when how and why.

The system should cover all aspects of the contract i.e. responsibilities of the parties, time, quality, measurement and payment, claims and disputes, etc and should be formalised in a document with a set of straightforward procedures that can be readily used by all involved in the administration process.

It may also be necessary to prepare a separate set of procedures in further documents to cover specific activities such as the operation of a laboratory or the field inspections to be carried out by site inspectors.

The manual should describe all the separate elements, activities and items that have to be carried out, thought about, and implemented by a project team, responsible for contract administration and/or construction supervision.

Usually such a manual will also cover the activities of those who are off-site but are involved in administrating the contract, e.g. the senior resident engineer in the Engineer's head office.

Such a contract administration manual should make reference to and be complemented by 'inspection notes' for each basic part of the technical specifications; e.g., bridgeworks, driven steel piling. Notes for field engineers/inspectors can be produced to assist them in what they should watch out for. Such inspection notes should preferably make reference to the technical specifications.

The contract administration manual will also include, or make reference to quality control. Sometimes a separate quality control manual is produced. This would cover the field testing details, frequency of testing, the records to be kept, the frequency of survey checks etc. for the different parts of the permanent works.

Although it needs to be comprehensive it should also be concise and should be limited to facts and agreed management procedures.

It is intended that the CAM should define the roles and responsibilities of the personnel involved in this project and the various management and control procedures to be followed in implementing the project. The purpose of the definition is to ensure the satisfactory and timely conclusion of the project, as defined by the drawings and specifications.

It is not intended that the CAM should supersede any of the contract documentation but rather serve as a summary of them to facilitate easy reference and provide a single simple summary of details of how the Consultant and Contractor have agreed to manage the project

A typical framework for a Contract Administration Manual is included in Appendix 7-1 - Guideline CA6 CAM Framework. In general terms this framework divides the manual into the following sub sections:

- Administration
- Laboratory
- Environmental Management Plan
- HIV/AIDS
- Safety

7.3.1 Administration

This section of the CAM should include all of the administrative details of the project including but not limited to:

- Names, addresses, contacts, roles, authorities and responsibilities of those involved in the project
- How, when and under what circumstances communications between the parties should be directed.
- How, when and in what format records are to be maintained and updated
- Works programme requirements (level of detail, resources, updating etc.)
- Maintenance and updating of contract data
- Procedures to be followed for requesting approval and inspection of the Works.
- Procedures to be followed for measurement and financial control of the Works
- Procedures to be followed for the submission, recording, evaluation and resolution of claims. (see also Claims Manual)

7.3.1.1 Correspondence

The conditions of contract are quite specific about when the Parties to the contract are required to notify, advise and communicate information with each other. The conditions also specify under which of these circumstances the parties are required to forward copies of the correspondence to the other parties.

A schedule, on the basis of the FIDIC IV conditions of contract has been included in Appendix 7-2-Correspondence and Copies.

7.3.1.2 Records

The individual record keeping requirements are addressed under sections 7.4, 7.5 and 7.6 below.

7.3.1.3 Contract Data

This section should include a convenient summary of all contract data associated with:

- Contract Dates - Letter of Award
  Notice to Commence
  Contract Period
  Extensions of Time
  Provision of Performance Guarantee and approval thereof
  Provision of Works Programme(s)
  Consent to Works Programme(s)
  Provision of Cash Flow(s)
  Proof of Insurance Cover and Renewal Dates
  Insurance Policy Documents and Approval thereof
  Possession of Site(s)
  Certificate(s) of Completion
  Defects Liability Period(s)
  Statement at Completion
  Defects Liability Certificate
  Final Statement
  Guarantee(s) Validities
  Etc.

- Financial - Contract Sum
  Advance Payment and Guarantee
  Performance Guarantee
  Variation Orders
  Addenda
  GoE Budget
  Funding Agency Budget
  Contract Currency
  Currencies of Payment
  Contract Exchange Rates
  CPA Base Indices
  CPA Indices Sources

A typical contract data format has been included in Appendix 7-3 - Contract Data.

7.3.1.4 Procedures

The various procedures must clearly detail, for each specific action, who is required to do what when and following that who, in response, does what when in order to achieve the defined objective. In the case of a Contractor requesting approval of work to permit him to proceed, the procedure would have to address, but not be limited to the following:

- Definition of when (i.e. what constitutes completion) approval may be requested
- Definition of the physical format of the request for approval
- Definition of who may request and who may receive requests for approval
- The time period required by the Engineer between receipt of request and approval
- The procedure in the event of non approval
- Definition of the physical format of an approval
- Definition of who will give and how approval will be given

7.3.2 Laboratory

The function of the laboratory is to confirm that the materials and the works comply with the specification. It is therefore essential that the laboratory functions efficiently and that sufficient controls are exercised to guarantee the laboratory's test result.

The way to achieve this is to prepare, either as a free standing document or as part of the CAM, a Laboratory specific administration manual.

The exact format of the laboratory will depend on the on site arrangements for the use of the laboratory i.e. The Contractor may "own" and operate the laboratory with the Engineer using it as and when necessary or the Contractor and Engineer may share a common laboratory or the Contractor and Engineer may each operate their own independent laboratories.

Whichever the case it will be necessary, in addition to the physical administrative procedures, to define the contractual relationships between the laboratories and or persons operating and working in the laboratory(s).

A guideline for a Laboratory Administration Manual has been included as Appendix 7-4 - Laboratory Administration Manual.

7.3.3 Environmental Management Plan (EMP)

The EPA via legislation and the contract conditions and specifications will all impose certain environmental considerations on the Contractor in the implementation of the project. It is essential at the initial management meeting that ERA makes it clear to both the Engineer and the Contractor that they are committed to the protection of the environment and that they expect them both to be similarly committed.

To this end the Engineer and Contractor will be required to prepare an EMP to guarantee adherence to the specification and various other guidelines and requirements. This may be either a free standing document or part of the CAM.

Proposed contents of an EMP are included in Appendix 7-5 - Environmental Management Manual.

The environment and its considerations are addressed in detail in the Environmental Manual produced under the same assignment as this manual.

7.3.4 Social Management Plan (SMP)

Although the Social considerations of ERA's projects fall under the general umbrella of the Environment they are separately addressed here to emphasise ERA's commitment to the implementation of "socially aware" projects. In this regard the contract conditions and specifications will all impose certain social considerations on the Contractor in the implementation of the project. It is essential at the initial management meeting that ERA makes it clear to both the Engineer and the Contractor that they are committed to the "social" environment and that they expect them both to be similarly committed.

To this end the Engineer and Contractor will be required to prepare SMP, which will form part of the EMP to guarantee adherence to the specification and various other guidelines and requirements.

Proposed contents of an SMP are included in Appendix 7-5 - Environmental Management Manual.

Social issues their considerations are addressed in detail in the Environmental Manual produced under the same assignment as this manual.

7.3.5 HIV/AIDS

Although the HIV/AIDS considerations of ERA's projects fall under the general umbrella of the environment they are separately addressed here to emphasise ERA's commitment to the implementation of HIV/AIDS awareness and prevention campaigns as a compliment to each of their projects. In this regard the contract conditions and specifications will all impose certain requirements on the Contractor in the implementation of the project. It is essential at the initial management meeting that ERA makes it clear to both the Engineer and the Contractor that they are committed to the implementation of these campaigns and that they expect them both to be similarly committed.

To this end the Contractor will be required to present details of its HIV/AIDS awareness and prevention campaigns. A proposed contents of an HIV/AIDS awareness and prevention campaigns is included in Appendix 7-6 - HIV/AIDS Campaign Format

The environment and its considerations are addressed in detail in the Environmental Manual produced under the same assignment as this manual.

7.3.6 Safety

The contract and local legislation will impose certain requirements and obligations on the Contractor with regard to safe working practices and environment. It is important at that meeting that ERA make it clear that they are committed to the maintenance of a safe working environment and that they expect the Contractor and Engineer to be similarly committed.

In this regard the following should be discussed at the meeting:

- First Aid Facilities
- Emergency procedures in the event of death or injury
- Local facilities
- Evacuation plan
- Site, Camp and Accommodation Security
- Traffic Management Plan

The proposed contents for a Safety Plan are included in Appendix 7-7 - Safety Plan

Safety and its considerations are more fully addressed in the Environmental Manual prepared under the same assignment as this manual.

7.4 THE ENGINEER

Within The Engineer’s organisation an engineer is usually appointed the Project Engineer/Manager with these duties.

- to plan and supervise design in detail, if not already complete, and coordinate the issue by the Engineer of any further drawings to the Contractor under whatever procedure is stated in the contract
- to direct redesign if there are varied requirements of the Employer or changed site conditions, to estimate the effect which each of these variations will have on the programme and cost of the Works, and to advise the Engineer on issuing a Variation Order or whatever procedure is stated in the contract
- to advise the Engineer on the progress, trends and likely outcome of contracts

- to check the monthly measurement of work from the Engineer's Representative preparatory to the issue by the Engineer of interim payment certificates
- to administer the issue of the Engineer's certificates for payment to the Contractor
- to advise the Engineer on claims, disputes, completion and defects correction certificates
- to liaise with the Engineer's Representative on all the above

Responsibility for most communications with the Contractor's Agent is usually delegated by the Engineer to the Engineer's Representative. The extent to which the Engineer can delegate his powers in a contract is usually limited in the contract. Delegated decisions may also be subject to confirmation by the Engineer (see Appendix 3-5 FIDIC IV Clause 2.3).

The Engineer should inform the Contractor in writing of the extent of delegation of his powers to the Engineer's Representative. The Engineer should also inform the Contractor of the names and positions of assistants to the Engineer and the Engineer's Representative he will have to deal with during the execution of the Works. (See Appendix 7-2- Correspondence and Copies)

7.4.1 Duties

Under FIDIC IV (see Appendix 3-5) contracts the supervision of the works is entrusted to The Engineer whose powers and responsibilities are defined in the contract. The Engineer is appointed by the Employer to carry out the following duties:

- Issue drawings and instructions to the Contractor as necessary for the proper and adequate execution of the Works. (7.1)
- Require tests to be undertaken on materials, plant and workmanship both on site and at the place of manufacture. (36.1), (37.1,2)
- Examine and measure the Works before covering up. (38.1)
- Instruct the removal of materials not in accordance with the Specification and their substitution by suitable materials. (39.1)
- Instruct the suspension of progress of the Works. (40.1)
- Issue notice for the Contractor to commence the Works. (41.1)
- Determine extension of Time for Completion of the Works. (44.1)
- Notify the Contractor that the rate of progress of the Works is too slow to comply with the Time for Completion. (46.1)
- Issue a Taking-Over Certificate on substantial completion of the Works. (48.1)
- Notify the Contractor of any defects. (48.1)
- Vary the form, quality or quantity of the Works or any part thereof. (51.1)
- Value variations in the Works. (51.1,2)
- Ascertain and determine by measurement the value of the Works. (56.1)
- Deliver to the Employer an Interim Payment Certificate stating the amount of payment due to the Contractor. (60.2)
- Issue a Defects Liability Certificate. (62.1)
- Give notice of decisions regarding any dispute between the Employer and the Contractor. (67.1)

and further

- to organise his work to suit the approved program
- to co-operate closely with the Contractor on matters of safety
- to supervise the Works to check that they are executed to correct line and level and that materials and workmanship comply with the Specification
- to examine the methods proposed by the Contractor for the execution of the Works, the primary object being to ensure the safe and satisfactory execution of the Permanent Works

- to execute and/or supervise tests carried out on the site, and to inspect materials and manufacture at source where this is necessary
- to keep a diary constituting a detailed history of the work done and of all happenings at the site, and to submit periodic progress reports
- to measure in agreement with the Contractor's staff the quantities of work executed, so that the payments may be certified
- in the case of any claim, to agree with the Contractor and record all relevant circumstances so as to ensure that agreement exists on all matters of fact before any question of principle has to be decided by the Engineer
- to record the progress of the work in comparison with the programme
- to record all As-Built details
- to check that the Contractor has organised his work to achieve the approved programme
- to examine the methods proposed by the Contractor for the execution of the Works, the primary object being to see that they should ensure safe and satisfactory construction
- to check that the Contractor and all others on site comply with health and safety requirements
- to assist the Contractor to interpret drawings and understand the specification, and refer questions to the Project Engineer
- to assess and record the progress of the work in comparison with the programme

A schedule of Engineer's specific Rights and Obligations is included as Appendix 7-8 - Engineer's Specific Rights and Obligations.

7.4.2 Project Management

7.4.2.1 Reporting

Monitoring progress and resources provides the best summary of the development of the Contract and is a vital reference during construction and after. It provides the basic data for assessing entitlement to extensions of time and evaluating the cost of extra work and variations. Linked with other information such as diaries, weather records, delivery lists etc. it allows for the continuous review of progress and resources that is essential for investigating claims for delay or disruption. The Engineer should set up procedures with his staff for monitoring the progress of the Works and any circumstances that may affect it. This exercise has two purposes:

- Comparison of actual progress, durations and resources against those in the Programme to assess the accuracy and feasibility of the Contractor's assumptions
- Collection of information on the reasons for any delays, however caused, and their effects both direct and indirect on the overall progress of the Works.

Regular progress reports, usually prepared on a monthly basis, provide the basic data for assessing the Contractor's entitlement to an extension of time and determining what length it might be. In evaluating the cost of extra work or other variations the Engineer will look at these reports to demonstrate any effects on progress and to confirm the general level of output being achieved by the Contractor on comparable operations. The investigation of claims for delay or disruption is one of the most complex tasks undertaken by the Engineer and his team. A continuous review of the progress achieved on, and the resources committed to, the various operations are essential to clarifying the issued involved.

The subject of Claims and their Evaluation, Management and Resolution is separately addressed in the Claims Manual, prepared under the same assignment as this manual.

7.4.2.2 Measuring Progress

The question arises on how progress should be measured. It is sensible to compare elapsed time with the planned programme time for each of the major activities by physical inspection. This can provide a reasonable approximation when applied to self-contained operations that are carried out as one uninterrupted activity. Progress can also be measured by comparing the sum of money certified for payment with the total amount of the Bill of Quantities for that particular operation. Again this can work well on self-contained items but may produce an unrealistic result if an item includes some very expensive materials.

Unless expressly stated otherwise in the Contract, the responsibility for timely provision of materials and Plant rests with the Contractor. It is good practice for the Engineer to monitor forecast delivery dates against the latest versions of The programme. He should draw the Contractor's attention to any possible delays: in particular the times required to stockpile, sample, test and approve materials before they are incorporated into the Works.

It is suggested that the review of progress is done on a monthly basis to coincide with the monthly valuation and preparation of the progress report.

Slow Progress and Delays

There can be many reasons why the actual progress of any activity in the Contractor's Programme does not achieve the planned progress. These may include inclement weather, equipment breakdowns, erratic supply of materials, slow progress by utility companies, late handover of the site, bad ground conditions, and many other circumstances.

It is important to establish the cause of slow progress, particularly where it may lead to a delay in completing the critical activities described in the Contractor's Programme. Whenever the Contractor seeks to claim extension of time he is bound to provide supporting evidence detailing not only why the Employer is considered to be liable for these delays but also how they have occurred. The Contractor is required to submit contemporary records that provide full and detailed particulars of the grounds and amount of the claim. The Contractor's records must also be verifiable and it is therefore essential that the Engineer and his supervision team maintain a routine system of record keeping that can be used to confirm or otherwise the validity and supporting details of the Contractor's claim. The subject of record keeping is addressed in section 7.5.3 below

7.4.2.3 Initial Meeting

An initial co-ordination meeting with the contractor should be held and subsequent monthly progress meetings will be held.

The procedure to be adopted should be agreed at the initial Site Meeting convened soon after the award of the Contract. Matters which will be agreed include the following:

- frequency of meetings
- time and location of meetings
- personnel to attend
- recording of minutes

A typical agenda for the Initial Site Meeting has been included in

Appendix 7-9 - Initial Site Meeting **Agenda**.

7.4.2.4 Monthly Progress Meetings

Monthly progress meetings provide a forum for reviewing the Contract. For the meeting to be used to full advantage it should be chaired by the Engineer or his Representative and the Contractor should be invited to send a representative of similar status. The Employer should also be invited to send a representative from the project office and from the future maintenance authority. Their assistance in resolving any local issues can have considerable benefit to the progress of the Works.

This meeting therefore serves as a forum in which the Contract can be discussed at a high level and provides early warning of disputes that may not be capable of resolution at Site level. A formal agenda is essential and best prepared around standard main headings, such as those the Bill of Quantities.

A typical agenda for the site progress meetings has been included as Appendix 7-15 - Typical Site Meeting Agenda

Regular, properly conducted meetings, with agreed minutes, ideally should reduce the number of contractual letters between the Engineer and Contractor. Discussions on individual matters should not be allowed to become too prolonged. If an issue cannot be resolved satisfactorily or requires further discussion, a special meeting should be arranged to deal with the topic. This will then allow the meeting to progress onto the other matters on the agenda.

The regular Progress Meeting should not be used for discussing claims or contentious issues, these being left to special meetings, possibly with fewer people in attendance, and after further research.

As soon as possible after the meeting a draft set of minutes must be prepared by the Engineer's Representative. Minutes will be limited to the recording of progress, agreements, approvals, requests and decisions and should never attempt to record everything said, i.e. they are not intended to be a verbatim record the meeting. Copies of the draft minutes will be forwarded to the Engineer's Representative, Employer and Contractor and any agreed changes incorporated.

After agreement, the minutes should be signed by the Engineer's Representative, the Employer and the Contractor as confirmation of the correctness of the contents.

If the Contractor does not agree with the minutes, a note of the point(s) of disagreement is to be attached to the file copy of the minutes.

Copies of the signed minutes should be placed on the appropriate file and forwarded to all persons attending the meeting and to any person responsible for initiating some action.

Each meeting and minute should be numbered consecutively.

7.4.2.5 Monthly Progress Report

The Engineer’s Representative will be required to prepare reports, both routine and specific, including regular progress reports for the Employer. Many Employers (and funding agencies) have specific requirements for the format to be adopted. Where this is not so, the Engineer’s Representative should consult the Engineer and/or the Employer to agree report formats.

The progress reports will be required by the Employer at regular intervals, usually monthly or three-monthly and are often circulated widely, sometimes to individuals who may not be engineers or be familiar with the engineering complexity of a construction site or without the time to digest large amounts of data. Progress reports should therefore be concise and as far as possible free of jargon. Progress photographs taken from the same locations that best illustrate the main components of the works being carried out are an effective means of keeping interested parties informed. Where possible, progress reports should present information in a form that can be readily incorporated into a final completion report.

Reports on physical progress should include all matters concerning progress on the main activities and the overall progress of the works such as:-

- Comparisons between actual and planned progress
- The Contractor's resources including equipment and labour returns
- Staff movements and visitors
- Site meetings
- Problems and Solutions
- Delay claims
- Variations to the works
- Environmental and Social matters
- Financial matters
- Contractual matters
- Information required from or action required by ERA

Financial reviews should include comparisons between anticipated and actual expenditure and the current estimate of cash flow to completion. The details should be based on the Bill of Quantities with comments on the financial implications of Variation Orders, Site Instructions, Provisional Sum Orders, Dayworks and settled and anticipated claims. Significant changes in the estimated quantities of work items on re-measurement should be identified.

A guideline for monthly reports is included in Appendix 7-16 - Guideline CA8 Monthly Progress Reports.

7.4.3 Record Keeping

The above details the Engineer's duties but does not provide any guidance on how ERA should supervise that these duties are being fulfilled. The easiest way to do this is to physically review the Engineer's filing system and its contents in order to satisfy oneself that sufficient records are being kept and that all such records are easily recoverable. A typical project filing system for a Consultant is included in Appendix 7-10 - Engineer's Filing System.

Throughout the Contract the Engineer's Representative and the Contractor's Manager, personally and through their respective staff, engage in continuous dialogue. Site correspondence is meant to be business like and the constant theme of criticism running through the letter files is an inevitable consequence of the supervisory function of the Engineer's Representative. There is no substitute for agreed comprehensive records. Letters provide a running commentary, with corrections and observations, on the progress of the works to which both the Engineer's Representative and the Contractor's Manager have been free to contribute.

Putting it in writing ensures that opinions, proposals, approvals, rejections, criticisms, warnings, decisions, instructions, explanations and requests for information are preserved for future reference and are placed clearly before the recipient in such a way that they cannot be ignored. The spoken word can easily conceal an ambiguity or contradiction and is always open to the interpretation of the listener. The printed word contains only what is on the page and the scope for misunderstanding is limited.

Correspondence should:

- never be back-dated, and any excessive delay in receipt recorded
- always give full descriptions, particularly of locations
- be specific about names and dates
- be positive and firm
- clearly state intention and not prolong correspondence unnecessarily
- be precise on contractual matters stating appropriate clauses
- not casually insert a variation to the works
- never go outside the limits of delegation

- never bluff or make empty threats

Good communications amongst staff are essential. The Engineer's Representative should institute a system for the circulation of all copies of correspondence so that all members of staff are aware of the overall conduct of the project and not just matters of their own immediate concern. He must establish correspondence registration and filing systems in order to **e**nsure that all data stored can be efficiently traced.

7.4.3.1 Discussion on Relevant Records

The Engineer's Representative must ensure that comprehensive records are maintained on Site. Without a detailed record of the progress of every aspect of the project, the Engineer will be seriously handicapped in drawing up the final certificate and adjudicating in disputes between the parties to the Contract. If the information necessary to make a reasoned engineering judgement is lacking, there is a strong probability that the decisions of the Engineer will be subjected to criticism and review by others. The interests of the Employer in particular and the Contract in general will suffer. Volumes of records, however, are not enough. They must also be both contemporary and verifiable.

It is particularly important that the Engineer's Representative co-ordinates record keeping. Records are likely to be maintained by different members of staff and will include information from a variety of sources. It is increasingly the practice on Site to maintain separate records of many specific categories of data. For example, weather, Site communications and instructions to the Contractor. Site diaries, the traditional means of keeping many records, have not lost their significance and must still be kept.

The importance of Site diaries cannot be overstated. Everyone must keep a diary, not only to ensure that the maximum amount of detailed information is collected but also to permit cross checking to confirm the truth or otherwise of disputed statements. A standard type of diary is preferred, self carbonating if possible, with each page numbered. There should be no printed dates so that each entry has unrestricted length. At the end of a day's record there should be no gaps. Draw a line to the end of the page to conclude the day's entry so that no further information can be inserted at a later date. The following day's records should commence on a new page. These precautions establish the Site diaries as a routine, contemporary system of records acceptable as reliable evidence in any subsequent proceedings. Precise details on the records that should be kept will vary from Site to Site. Clearly, the technical records which will be required will be dictated by the nature of the Works.

The Engineer's Representative must keep comprehensive Site records which should include the following items.

- The site diary of the Engineer's Representative and those of his staff.
- Daily weather records including, maximum and minimum temperatures, humidity, rainfall and periods of adverse climatic conditions as well as the effects of adverse climatic conditions on the progress of the Works.
- The Contract Documents.
- All official correspondence received by and sent from the office of the Engineer's Representative.
- Registers for all incoming and outgoing correspondence.
- Materials investigation, bore-hole and test pit logs, and reports on laboratory testing.
- All setting out information issued, including survey reference station data.
- Original ground levels.
- Drawings issued to the Contractor.
- Drawings received.
- Copies of all Instructions, Daywork Orders, Variation Orders and Provisional Sum Orders issued to the Contractor.
- A register of third party claims, together with file copies of all such claims and complaints.
- The results and summaries from materials control sampling and testing, including testing both on and off the Site and also test certificates from manufacturers.

- Piling and pile tests.
- Field survey books, survey calculations and ground data plots.
- Contractor's labour and equipment returns.
- Minutes of Site Meetings.
- Progress photographs.
- All reports.
- Copies of all calculations
- Measurement sheets.
- Copies of Contractor's claims, and the assessment by the Engineer's Representative, including all relevant correspondence.
- The "As-built" Drawings.
- Accidents register.
- All information pertaining to the establishment, maintenance and removal of the Engineer's site establishment, equipment and transport.
- A register of visitors to Site.
- Staff files, including register of leave, sick leave etc.

7.5 CONTRACTOR

Following the acceptance of a Contractor's tender a contract is established between the Employer, ERA, and the Contractor. This contract places a number of duties and obligations upon the Contractor.

7.5.1 Duties

In terms of FIDIC IV contracts the Contractor's duties are primarily to undertake the Works as detailed in the contract document within the specified contract period. These are further addressed in Appendix 7-11 - Contractor's Specific Rights and Obligations.

7.5.2 Project Management

At the commencement of a project the Contractor is required to submit his programme for the construction of the works. This should reflect the Contractor's preferred methods and sequence of working as well as its intended allocation of equipment, materials and personnel.

The Engineer, and the Employer, are required to "consent" to this programme and in doing so they will both commit themselves to providing all of the necessary information, possession, access and funding required by that programme. Any failure to furnish any of these elements of the project will in all likelihood result in a claim from the Contractor for either delays or compensation or both.

The Employer and Engineer must therefore ensure that they are able to accommodate the Contractor's programme or arrange for its modification prior to giving their consent. In this regard it must be stressed that neither the Engineer nor the Employer has the right to refuse to give their consent to any reasonable requests from the Contractor.

7.5.3 Record Keeping

The reason that records are maintained by the Contractor, Engineer and ERA PE is in case information is required in the future and this information is usually required in order to resolve contractual disagreements and arguments or in support of claims for either time or money.

The record keeping systems and records which are maintained by each of the three parties therefore need to be complementary and where possible the same. The records which are required to be maintained by the Engineer and the ERA PE are addressed under sections 7.4.3 and 7.6.3 and the Engineer needs to ensure that the Contractor maintains similar records and where it is known that a claim is to be submitted an agreed set of records for that particular claim. This will avoid the problem of conflicting information at the time of evaluation of the claim.

7.6 ERA PROJECT ENGINEER

There are generally two contracts formed in a civil engineering construction project:

- The first, between ERA and a Contractor who has agreed to perform the services described in the Tender documentation; and
- The second, between ERA and a Consultant, who undertakes to supervise the construction of the works.

As ERA specifically employs a Consultant to supervise the Works it is not necessary for ERA to do the same. What is, however, necessary, is for ERA to supervise the Consultant to ensure that the works are being properly supervised and that ERA's best interests are being looked after by the Consultant. In order to supervise the Consultant it is necessary for ERA to understand exactly what it is that the Consultant is required to do and to ensure that it is being done. This aspect of the project's administration is addressed in section 7.4

In February 1995 under a Technical Assistance contract Louis Berger Inc. produced a Contracts Administration Organisation Manual. In November 1995 they also prepared a Contracts Management Systems Manual specifically for Force Account contracts. Both of these documents were intended to supplement and complement the Ministry of Works and Urban Development's Construction Projects Development Process Management System Manual.

In 1997 and 1998 also under a TA contract a further series of guidelines for Project Counterparts specifically targeting the project Design, Design Review and Bid Evaluation stage were also produced.

During 1999 and 2000 under a DFID financed Technical Assistance project a series of Contract Administration Guidelines were produced specifically for the use of ERA Project Engineers. This document has now been updated and is included as Appendix 7-12.

In 2002 under a different Technical Assistance contract Louis Berger Inc. produced a series of Standardised Bidding Documents, Design Manuals and Specifications.

All of the above documents have been included in this Manual as well as being available within ERA. In general terms, the content of all of this documentation is still valid.

In addition to this IDA, ADB and the EU have all of their Guidelines and Users Guides available on their web sites.

A list of some of the available documents has been included in Section 10

Following the acceptance of a Contractor's tender a contract is established between the Employer, ERA, and the Contractor. This contract places a number of duties and obligations upon ERA and accordingly the PE, who will have been designated as the responsible person.

7.6.1 Duties

The PE's primary duty is to represent ERA and ensure that the Engineer supervises the works in accordance with accepted international standards. His secondary duty is to ensure that ERA complies with its obligations in terms of the contract. In general terms ERA's duties are the following:

- To appoint the supervising Engineer
- To give the Contractor access to and possession of the site
- To provide the Contractor with the details of what it is which is required to be constructed
- To pay the Contractor for all works undertaken
- To approve and respond timeously whenever required to do so by the contract
- To take over the works when completed.

The specific duties and obligations of the PE are further addressed in Appendix 7-13 - ERA Specific Rights and Obligations.

Under section 5.2.8 the issue of ERA granting possession of site was addressed. The current ERA system only begins to address the clearance of obstructions in the RoW or site after a contract had been awarded and once the Contractor is on site. As the expropriation negotiations and payment of compensation takes approximately three months[6] it is almost a foregone conclusion that every contract will have delays as a result of lack of access to the site and even if no delays are experienced there is a further possibility of delays if any "unforeseen" circumstances are encountered in sections handed over late.

This problem will continue until such time as ERA changes its system and commences with the clearance of obstructions during the feasibility and/or design phases. This places a terrible burden on the PE who is required to manage the project and ensure that there are no delays. The best that the PE can do under these circumstances is to ensure that everything with regard to the clearance of obstructions happens with a minimum of delay.

7.6.2 Project Management

ERA is the promoter and owner of the projects which it implements and, although it employs the Engineer and Contractor to implement the project as conceived, it is therefore ERA's responsibility to monitor and manage the project and the Parties to the project in order to ensure that it realises the project as conceived.

The concept of project management and contract administration are addressed throughout this manual but specifically in sections 7.1 and 7.2 and further in the series of Guidelines contained in section 7.13 APPENDICES.

[6] This is ERA's own estimated time but in reality it can take much longer

7.6.3 Record Keeping

As previously stated the ERA Project Engineer tasked with the supervision of the implementation of a construction project must have access to all of the documentation generated prior to the commencement of construction of a project. In addition he will be required to maintain and have access to the documentation generated during the construction contract.

A list of suggested files which should be maintained by the PE is included in Appendix 7-14 - ERA Filing System.

7.6.3.1 Project Documents

Project documents, as opposed to contract documents, comprise all of the documents and information generated throughout a project's life cycle as described above. This documentation will comprise, but not necessarily be limited to, the following:

- Project's internal technical, financial and chronological briefing
- Design Consultant's Terms of Reference and Procurement
- Project's Design and associated correspondence, reports, minutes of meetings and payments
- The Contractor's Procurement Process, Tender Evaluation and Contractor's Appointment
- Construction Contract correspondence, instructions, Variation Orders, progress reports, minutes of meetings, works programmes, progress claims and certificates, drawings, inspection and testing records, As-Built information etc.

These documents will be in both hard and soft format and will comprise technical data sheets, calculations, memoranda, letters, faxes, e-mails, records of telephone conversations, tender and contract documents, drawings and sketches, specifications, programmes, invoices, payment records, minutes etc.

The need to refer to and recover documents is particularly acute when it becomes necessary for ERA to "defend" itself against claims and to support its efforts during dispute resolution procedures. At such time it becomes necessary to refer to every document relevant to the case and the ability to access this information quickly and comprehensively is essential to ones defence.

From the above it can be seen that even a simple project will generate a large volume of documentation and that a successful Contract Administrator or Project Engineer will be the one that is able to efficiently manage and utilise this documentation.

7.6.3.2 Document Storage

The sources and volume of individual documents will vary from individual pages to voluminous reports, irregular sized programmes and drawings, multi volume records and electronic data and files. The document storage system must therefore be flexible enough to accommodate the volume and differing nature of the records

The volume of documents will be great and whatever system is adopted should plan for accommodating this volume from the beginning. A typical Project filing system needs to accommodate

- Letters, memos, faxes etc (small # of pages);
- Reports, IPC, Claims, Contract Doc, Specs, Insurance Policies, Calculations, Designs;
- Inspection and Test results (many volumes);
- Drawings (irregular sized);
- Computer records; and
- Diskettes, CDs, flash drives, tape drives, hard disks,

all of which need to be stored in a logical and tidy manner. Drawings and other large and irregularly shaped documents will need to be hung or rolled and stored separately but they and their location should be referred to in the general filing system.

7.6.3.3 Document Recovery

In order to be able to ensure efficient retrieval of documents it will be necessary to establish a document register and whilst this should be done on an organisational level as a complete document management system, there is no reason why individual Project Engineers should not create their own simple Excel based document management systems. Excel has the facilities to sort data in any chosen order and to search data for particular reference words.

In order to create such a system it will be necessary to identify every document by assigning it a unique Document Identification Number (DIN) and then entering the information relevant to that document on a spreadsheet. An example of such a document register is given below.

DIN	Date	Reference	From	Subject	DIN & Chronological Order
0001	13-Jan-06	Eng/Contr/0001	Eng	Appointment of engineer's representative	
0002	26-Jan-06	Contr/ERA/0001	Contr	Submission of performance guarantee	
0003	3-Feb-06	ERA/Contr/0001	ERA	Approval of performance guarantee and guarantor	
0004	14-Feb-06	Contr/ERA/0002	Contr	Submission of insurance cover note	
0005	12-Mar-06	Eng/ERA/0006	Eng	Advance payment certificate	
0006	20-Mar-06	Eng/ERA/0008	Eng	Request for confirmation of engineer's housing location	
0007	21-Mar-06	ERA/Eng/0002	ERA	Confirmation of location of Engineer's housing	
0008	4-Apr-06	Eng/Contr/0010	Eng	Issue of notice to commence	
0009	5-Apr-06	ERA/Eng/0003	ERA	Granting of possession of site	
0010	10-Apr-06	Contr/Eng/0007	Contr	Submission of clause 14 programme	
0011	25-Apr-06	Contr/Eng/0011	Contr	Submission of clause 14.3 cash flow	
0012	5-May-06	Contr/ERA/0003	Contr	Submission of insurance policy	
0013	15-May-06	ERA/Contr/0002	ERA	Approval of insurance policy and insurer	

The information in this document register is currently sorted in chronological and DIN order. The information can, however, be easily sorted in either ascending or descending order by column heading or combination of column headings by using the Excel function Data/Sort/Sort By/Column Heading. The example below has sorted the information above in ascending order by correspondence originator i.e. Column "From" plus Date and DIN order

DIN	Date	Reference	From	Subject	Letter Originator Order
0002	26-Jan-06	Contr/ERA/0001	Contr	Submission of performance guarantee	
0004	14-Feb-06	Contr/ERA/0002	Contr	Submission of insurance cover note	
0010	10-Apr-06	Contr/Eng/0007	Contr	Submission of clause 14 programme	
0011	25-Apr-06	Contr/Eng/0011	Contr	Submission of clause 14.3 cash flow	
0012	5-May-06	Contr/ERA/0003	Contr	Submission of insurance policy	
0001	13-Jan-06	Eng/Contr/0001	Eng	Appointment of engineer's representative	
0005	12-Mar-06	Eng/ERA/0006	Eng	Advance payment certificate	
0006	20-Mar-06	Eng/ERA/0008	Eng	Request for confirmation of engineer's housing location	
0008	4-Apr-06	Eng/Contr/0010	Eng	Issue of notice to commence	
0003	3-Feb-06	ERA/Contr/0001	ERA	Approval of performance guarantee and guarantor	
0007	21-Mar-06	ERA/Eng/0002	ERA	Confirmation of location of Engineer's housing	
0009	5-Apr-06	ERA/Eng/0003	ERA	Granting of possession of site	
0013	15-May-06	ERA/Contr/0002	ERA	Approval of insurance policy and insurer	

Excel's search facility can also be used to identify all correspondence with, for example, similar subject matter e.g. Insurance.

7.7 SITE MEETINGS

7.7.1 Introduction

Most of the supervising Consultants of civil works contracts will hold monthly site meetings. In addition to these they may hold other meetings at various times to discuss items of a more specific nature e.g. a delay in progress, a technical problem on site etc. Copies of the minutes of the site meetings must be sent to the PE as they will contain valuable background information on the more intimate details of the project. It may not always be necessary for ERA to receive copies of the minutes of other meetings and this decision should be left to the discretion of the Consultant.

In addition to receiving copies of the site meeting minutes the PE should make a habit of attending as many site meetings as possible. This will familiarise the PE with the progress on site and assist the Consultant with the management of the project. Appendix 7-15 - Typical Site Meeting Agenda contains a typical site meeting agenda.

7.7.2 Interpreting Meeting Minutes

The format of every site meeting tends to reflect the personal preference of the chairman of the meeting. Notwithstanding this the matters discussed in the meetings are usually very similar and so it is these general topics which are considered below.

Unlike the guidelines on the interpretation of the Monthly Report the preparation of guidelines for meeting minutes is made difficult by the infinite number of scenarios which can be reported or discussed. The remainder of this section provides guidelines for the systematic review of the typical information likely to appear in the minutes. It is again worth stating that the attendance at a site meeting or the receipt of minutes is the START and not the end of the monitoring process.

7.7.3 Action required from previous minutes

The contents of meeting minutes are either statements of historical fact which require no action or statements of some future event which almost always requires action by someone. It is usual, therefore, to review the previous meeting's minutes to confirm that they correctly reflect the content of that meeting and to ensure that the actions which should have been taken, have been taken. Where actions have not been taken this should be minuted with the reason for the lack of action and reviewed at the following meeting.

The most important consideration here is whether the necessary actions are being taken timeously. If they are not then some one is not doing their job properly and ERA should seek an explanation. In this regard the "guilty party" could be the Contractor, the Consultant or ERA.

7.7.4 Progress on site since the previous meeting

The actual progress on site versus the planned progress on site is reported by the Contractor, who is required to provide reasons for the rate of progress (good or bad) with details of what action is to be taken or is necessary if the rate has been less than that planned. It is important to note here that i) If the lack of progress is as a result of a failure on the part of the Contractor then the Contractor is obliged to take whatever action is required to catch up the lost time, production or progress or ii) If the lack of progress is as a result of a failure on the part of ERA or something beyond the control of the Contractor then the Contractor is not obliged to catch up but merely to advise ERA through the Consultant that the planned progress cannot be met and that the contract will accordingly be completed late. ERA then has the choice of accepting late completion or requesting the Contractor

to complete the works on time by accelerating the rate of production. ERA will be required to meet the cost of such acceleration. In the event of the planned rate of production being revised the Contractors programme will also need to be revised to reflect the change

7.7.5 Contract Data

The Contractor will submit a schedule and report on the materials, plant, equipment and personnel on site for the previous month. This information is important as it will indicate if the planned resource levels have been achieved.

Both under and over resourcing of the site should be queried. Under resourcing is likely to result in delays to the progress whilst over resourcing could indicate an acceleration of the planned progress. In the case of acceleration it is essential to determine at a very early stage which party will bear the cost of the acceleration for the reasons stated above.

The Contractor will also report on the occurrence of rain, floods etc. In general Contractors are only compensated for delays or costs incurred as a result of exceptionally inclement weather. To determine if a particular occurrence was exceptionally inclement requires it to be considered in comparison with the normal weather conditions, in that area at that time of the year. Full details of either damage of delay must be recorded when they occur. This will facilitate a comparison with the norm. The type of occurrences for which details should be kept are typically; duration and intensity of a storm, millimetres of rain, time of day, height of flood etc. Claims for compensation and extensions of time are fully addressed in the Claims manual prepared under the same assignment as this manual.

Appendix 7-3 - Contract Data includes details of the type of information which should be provided by the Contractor at monthly site meetings.

7.7.6 Materials and Quality Control

In addition to satisfying himself that materials are being tested and quality control effected, the PE should utilise the information reported under this heading to determine if any general or specific problems are being experienced on site in order that he might understand the problem and assist in its resolution

7.7.7 Financial matters

Matters relating to the payment or non-payment of Contractors certificates, approval and/or submission of new rates, retention monies, liquidated damages, payment of resolved claims etc will be discussed under this section.

The most important matters likely to be raised under this section will relate to non- or late payment of Contractors certificates. Non- or late payment can result in delays to the Contractor as a result of problems with cash flow, can and most likely will result in claims for the payment of interest on outstanding amounts and in some circumstances can even lead to determination of the contract by the Contractor.

It is important therefore that when such problems are reported that they be resolved as quickly as possible by the PE. In this regard the PE should not consider that his responsibility ceases once a certificate or notice to pay is forwarded to the Finance Division.

7.7.8 Contractual matters

Items raised and recorded under this section are the most important as they are the items, if not addressed correctly and timeously, which will lead to claims (time or money) and legal action. These are also the most complicated items to deal with as an intimate knowledge of the conditions of contract is required (see 3.4)

The Conditions of Contract or Terms of Agreement contain the legal basis for the contract between the Contractor and ERA. These conditions specify the procedures to be followed, notices to be given etc. in the event of any action of a contractual nature, the most common of which is a claim for additional payment. The most important aspect of dealing with a contractual matter is the adherence to these procedures. Failure to follow the procedures, notice periods etc. is likely to result in the forfeiture of ones rights and accordingly entitlements. In this regard it is worth noting that all correspondence of a contractual nature MUST state the particular clause in terms of which the submission has been made.

It is essential, therefore, that the PE has an intimate knowledge of the Conditions of Contract, in this regard the standardisation of the contract documentation will facilitate this familiarisation with the conditions of contract.

7.7.9 Claims

The conditions of contract require the Contractor to notify the Consultant as soon as something happens which is likely to result in a claim (time or money). They are further required to submit a fully motivated claim as soon as certain criteria have been met (see Appendix 3-5 FIDIC IV Clauses 44 and 53). It is essential that the correct procedures are followed to avoid either party forfeiting any of their rights with regard to the claim.

Although claims are usually contractual matters they have been dealt with separately here as there are usually quite a number submitted during the course of a civil works contract. The comments above under Contractual Matters are also applicable to claims for either time or money.

The most important consideration with regard to claims is that they be timeously resolved. If the minutes continue to refer to a particular claim an explanation for the lack of progress should be sought from the Consultant by the PE.

Claims and their evaluation are more fully addressed in the Claims Manual prepared under the same assignment as this manual

7.7.10 Technical matters

Some chairmen choose to exclude technical matters from site meetings on the grounds that the Contractor and Consultant are together on site all day every day and that matters of a technical nature can be resolved at any time. If technical matters are discussed it is best to limit the discussion to a general notification of the problem with the details left to be resolved by designated parties at a later stage.

The nature of the technical matters raised will indicate the type of problems being experienced on site e.g. requests for drawings, details, approvals may suggest that the Consultant is not performing as required by the construction programme, requests for alternative solutions may indicate the occurrence of unexpected materials, terrain etc. and requests for additional testing, rework etc. may indicate problems associated with the quality of workmanship. As above, the minutes should always indicate progress otherwise explanations should be sought by the PE.

7.7.11 Initiating Action

An error most often made, following a meeting, is to delay initiating any action until such time as the minutes are received. Minutes are not intended as a reminder for action but a record of what transpired and what action those in attendance undertook to initiate. Obviously, if one has not attended the meeting one has no choice.

Conditions of Contract and contract documents often state that the contents of minutes cannot in themselves be accepted as instructions and that it is necessary to confirm any minuted instructions in writing following the meeting. Most of these actions or confirmation of instructions will be effected by the Consultant. There are, however, certain actions which will be required of ERA and the PE e.g. confirmation of the acceptability of new methods, works etc. When these items are minuted the PE should immediately furnish the necessary response without waiting for an official request or reminder from the Consultant.

The other type of action required of the PE relates to the seeking of explanations from the Consultant for apparent anomalies, lack of progress etc.

7.8 CIVIL WORKS REPORTS

The civil works contracts entered into by ERA are, in general, between themselves and a construction company. In addition to this contract but quite separate from the construction contract ERA usually enters into a contract with a consulting engineering company for the supervision of the project.

FIDIC conditions of the civil works contracts identify an entity known as The Engineer, who in the contractual relationships described above is the Consulting Engineer (see Appendix 3-5). On award of the contract ERA effectively delegates all of its powers, duties and authorities to the Consultant, introduces the Contractor to the Consultant and then stands back from the direct management of the contract. However, because of the substantial investment that ERA makes on behalf of the GoE and because ERA is ultimately the owner/operator they continue to monitor the progress and quality of the works to satisfy themselves that both the Contractor and Consultant perform as required and deliver the Works within the specified time, quality and budget.

As ERA is not, in general, involved in the day to day activities of the site their only sources of information are reports received from the Consultant on site and reports received from any other parties resulting from periodic visits to site. This reporting takes three forms viz. a comprehensive long form monthly report on the progress of the works, the minutes of meetings held on the site and notes/formal reports received from others, following visits to site.

The long form monthly report known as **CONSULTANT'S PROGRESS REPORT FOR CONSTRUCTION CONTRACTS** covers all aspects of the project i.e. technical, contractual and financial. This report should be submitted to ERA within seven days of the end of the month and provides the details of the progress of the works in relation to the programme as well as problems being experienced and solutions to be implemented.

The **MINUTES of MEETINGS** usually relate to the regular meetings held on site between the Contractor and the Consultant and sometimes attended by ERA. These will contain details of the day to day occurrences on site.

The **OCCASIONAL REPORTS** should normally be generated by the Project Engineer. Because of the contractual relationships which ERA establishes for the management of its projects only the Consultant is authorised to issue instructions to the Contractor and similarly only the designated Project Engineer is authorised to issue instructions to the Consultant.

In the case of reports and minutes it is necessary for their contents to be studied, analysed, understood and acted upon. This document serves to highlight those elements of the reports which require particular consideration and further provides guidelines for the nature of the consideration and the likely action necessary.

The following sections focus on the Monthly Report and Meeting Minutes but the concepts of how to interpret and react are equally valid for the review of any contract related document.

7.8.1 The Monthly Report

Between 1997 and 1999 under a DFID funded Contract Capacity Building Project a number of progress-reporting formats and accompanying guidelines were prepared. These included a comprehensive monthly report, for each civil works contract, containing physical, contractual and financial contract data for the monitoring of progress. These reports are required to be prepared by the supervising consultant of each contract and submitted to ERA on or before the seventh of each month. The function of this Monthly Report is threefold namely;

- To improve the ERA Project Engineer's knowledge and control of their projects and ease the ERA senior management's overall monitoring of the projects.
- To provide pertinent contract information for the monitoring and management of the RSDP.
- To provide input for the Project Engineer's monthly programme summaries for the various funding agencies of RSDP.

This section serves to assist those members of the ERA staff, responsible for civil works project management and control, to correctly interpret the information reported. This will prompt questions and actions necessary for the proper management of civil works contracts. In order to ensure that the best use is made of the Monthly Reports and their contents it is essential that the following procedures are followed

- *The RE must complete the monthly report in the specified number of copies and submit it to ERA on or before the seventh of the month.*
- *On receipt the Branch/Division Head will pass one copy of the Monthly Report to the PE dealing with the project.*
- *The PE will review the Monthly Report.*
- *The PE will then make notes of any observations, necessary actions etc. and pass these and the report back to Branch/Division Head.*
- *The Branch/Division Head shall decide or approve the PE's recommended action.*
- *The Branch/Division Head shall ensure that the PE implements the necessary actions and/or gives the necessary feedback to him.*
- *The information given in the monthly report shall be used by to update the monthly progress report for the RSDP.*

7.8.2 Contents of the Monthly Report

The ERA monthly report framework and content is repeated below for ease of reference and as a reminder.

1.0	Project Information	7.0	Supervision and Monitoring
2.0	Contractual Matters	8.0	Financial Report
3.0	Mobilization	9.0	Meteorological Report

4.0	Works Programme	10.0[7]	Environmental Report
5.0	Materials Report	11.0	Appendices
6.0	Progress of the Works	12.0	Photographs
	Appendices Contractor's Personnel		
	Plant Schedule		
	Consultant's Personnel		
	Minutes of Meetings		
	ERA/RSDP Status Report		
	Accident Schedule		

Although the ERA standard format does not include for an Executive Summary it is normal to include such a summary to facilitate the reading of the report by those not "interested" in the technical details of the project.

A guideline to the monthly report is included in Appendix 7-16 - Guideline CA8 Monthly Progress Reports.

7.8.3 Interpreting the Monthly Report

This section provides guidelines for systematically reviewing the Monthly Report's of each civil works contract and analysing their contents in order to determine the necessary actions. In this context it is important to note that the receipt of these and other reports is the START and not the end of the monitoring process.

The Monthly Report has been created as a combination of Excel based spreadsheets and graphs and MSWord based text. Although the generation of the report is the responsibility of the supervising Consultant it is the ERA Project Engineers' responsibility to satisfy himself of the reasonableness of the information reported and to query that which seems unreasonable.

7.8.3.1 Section 1 - Project Information

This section comprises the following sub-sections:

1.1	Description of the Project
1.2	Location Map
1.3	Typical Cross Sections
1.4	Basic Contract Data

This section provides a convenient summary of the project and its components, location, budget, timing etc. With the exception of the contract's estimated end date and final cost the information contained in this section is likely to remain unchanged for the duration of the contract and, as this section will, in all likelihood, be used as a source of contract information by persons not otherwise directly involved in the project, it is essential that the Project Engineer ensure, at the commencement of the project, that the information included is correct.

In general, no interpretation of the information contained in this section is necessary as it is simply a summary of facts which are best verified by a comparison of them with those contained in the Contractor's contract document i.e. Letter of Award, Notice to Commence and Conditions of Contract and the Supervising Engineer's Contract document.

[7] The standard ERA monthly reporting format does not include for any Environmental reporting. This is obviously and oversight and the Environment including Social aspects must be reported upon in each and every project report. Item 10 Environmental Report has accordingly been added to the Standard reporting format.

The Project Engineer should, however, always cast an eye over the information related to the estimated final contract date and amount as any differences between the contractual date and amount will immediately warn him of changes and the need for him to look for further explanations in the body of the report.

7.8.3.2 Section 2 - Contractual Matters

This section comprises the following sub-sections:

2.1 Bonds (guarantees) and Insurances
2.2 Removal of Obstructions
2.3 Possession of Site
2.4 Summary of Claims

Contractual matters or more correctly the failure of either of the parties to the contract to fulfil their contractual obligations and responsibilities will invariably result in a "claim" by either the Contractor or the Employer. The contents of this section will therefore provide the first evidence of something "going wrong". This information must be taken very seriously by the Project Engineer and corrective action immediately instituted to rectify the situation.

Bonds (guarantees) and Insurance

The failure by the Contractor to provide the specified guarantees and insurance will, in addition to placing the Contractor in breach of the contract, place ERA in a very vulnerable position.

In the absence of guarantees and the Contractor absconding or not performing ERA would be unable to recover any Advance Payment paid, to obtain any relief with regard to the rectification of works poorly done etc. and in the absence of insurance ERA would have to carry the cost of any loss or damage itself.

The Project Engineer must therefore carefully review the information under this section and in the event of any failure by the Contractor to provide either guarantees or insurance immediately investigate the reasons for the failure.

ERA's conditions of contract state that the Advance Payment is not to be made until the both the performance and advance payment guarantees have been received. The question of financial vulnerability should not therefore arise. However, the failure to provide the guarantees will in all likelihood also mean that the Contractor cannot start the works and in this case one would expect a delay. In the event of such a delay full details of the reasons for the failure to supply the guarantees, delays experienced and the implications of those delays would need to be recorded in order to ensure that any future claims for EoT were evaluated in the light of the true background details.

In the case of the Contractor's failure to provide the specified insurances, ERA's conditions of contract provide for ERA to take out the cover itself and to recover the cost of such insurance from any monies due or which become due to the Contractor. In this case the Project Engineer would need to advise the Branch or Division Head of the failure, the required cover, the cost of such cover and where it can be "purchased".

Removal of Obstructions and Possession of Site

One of ERA's primary obligations is to give the Contractor possession of and access to the site of the Works. Failure to do so for whatever reason will prevent the Contractor from undertaking any of the works on that portion of the site. Therefore if there are any obstructions which prevent the Contractor from undertaking any of the works or if they are not given possession of the site the Contractor would, in terms of the contract, be entitled to recover any costs incurred from ERA as well as an extension of the period for completion.

Unfortunately ERA's current system of clearing the Right of Way commences far too late in the contract implementation programme and almost invariably results in delays and subsequent financial claims. Until this process is started much earlier this situation will continue. The Project Engineer can, therefore, only hope, at best, to reduce the level of the claims by ensuring that the delays are minimised.

Any entries under these two items must immediately be referred to the Right of Way Branch. At the same time the Project Engineer must investigate the reasons for the delays and propose measures to mitigate the delays. Having done so, this information should be referred to the Branch/Division Heads for implementation of the proposed mitigation measures.

Finally, as these delays will result in claims for both EoT and costs the estimated contract end date and final contract amount must be adjusted to reflect these claims. This must be done in ERA's own records, the Project Engineer's records and the Engineer must also be instructed to make the necessary adjustments to his records.

Summary of Claims

It is of utmost importance for the smooth running of a project that all claims be addressed and resolved as quickly as possible. The Engineer and ERA therefore need to be proactive and not "pretend" to be ignorant of claims until they are "officially" presented. This summary should therefore reflect those claims which have been submitted by the Contractor as well as those claims which the Engineer and or ERA anticipate. The reason for this is that once attention is drawn to a claim agreements can be reached on the nature of the records which are to be maintained in support of the claim.

The Project Engineer should always ensure that the report clearly indicates who is responsible for doing what with regard to the claims and that time is not being wasted by one party waiting for information, which the other party does not realise is required, before taking further action. In the event that action is required by ERA, the Project Engineer must ensure that the persons within ERA responsible for taking that action and or decisions is fully briefed and aware of the time limitations for their actions and decisions.

7.8.3.3 Section 3 - Mobilisation

This section comprises the following sub-sections:

3.1 Site Establishment
3.2 Contractor's Plant and Equipment
3.3 Materials
3.4 Contractor's Staff Mobilisation

The progress of the Works is directly related to the level of personnel, plant and materials which the Contractor assigns to the site. At the time of tender the Contractor will usually have indicated the levels of plant and personnel which it intends assigning to the contract. This will provide a first reference for the Project Engineer's evaluation of the actual plant and personnel assigned to the contract.

Although useful this comparison may not be relevant as the construction information issued may be different to that provided at tender stage. The Contractor's programme of works is expected to reflect the levels of plant, personnel and materials necessary to complete the works as indicated on the construction drawings.

The information reflected in this section will be the actual numbers of plant, materials and personnel assigned to the project as well as the progress made with the establishment of the site facilities.

Site Establishment

The period for the establishment of the site facilities for both the Contractor and the Supervising Engineer will be reflected on the Contractor's works programme. Any delays with the establishment of site will, in all likelihood, result in delays to the completion of the works. In particular delays in the establishment of site laboratories, batching plants, crushers, asphalt plants and the facilities for the Engineer are likely to result in arguments, disagreements and delays.

The Project Engineer must review the information in this section with a view to the likely implications of any such delays and in the event of such delays occurring investigate the reasons for the delays, demand that all necessary action be taken to recover lost time and ensure that the Engineer carefully records in detail the reasons for the delays, the time of the delays and the implications of the delays. Where necessary if such delays are unlikely to be recoverable, the delay must be factored into the estimated contract completion date and all parties advised of the delay.

Contractor's Plant and Equipment
Materials
Contractor's Staff Mobilisation

The information recorded under each of the headings above will form the basis of all future discussions and claims for delays, extensions of time and additional costs. It is therefore of vital importance that every bit of information applicable to these three headings be recorded. This information is normally presented in tabular formats and in the case of the ERA standard Reporting format the information is required to be presented in report appendices.

The task of the Project Engineer when reviewing the report is to compare the actual levels of plant, equipment, personnel and materials with those required by the Contractor's programme and where differences exist to investigate the reason for the differences, the implications of the differences on the progress of the Works and the action which the Contractor intends to take to rectify the situation. In addition the Project Engineer must ensure that all such deviations are recorded in detail by the Engineer in case the information is required for the future evaluation of any claims.

In the case of the Plant schedules it is important that that the schedules differentiate between items present on site, items present but out of service and items present but unutilised. This information can be further supplemented by plant hour meter readings and or odometer readings as well as fuel consumption records.

In the case of Personnel schedules the records should similarly permit and analysis of the effect of the absence of any particular individual e.g. plant operators.

The Contractor is also required to provide a site organisation chart. In reviewing this, the Project Engineer must ensure that the defined lines of communications are clear and that they do not result in any double answerabilities. In the event that this is the case, this should be drawn to the attention of the Engineer with the request to restructure the organisation.

7.8.3.4 Section 4 - Works Programme

This section comprises the following sub-sections:

4.1 Current Status
4.2 Monthly Work Programme

The information under this section is limited to the contractual and specified requirements of the Works programme i.e. it does not include any information on the actual progress of the Works.

Current Status

Under this heading the Engineer is required to record when the programme was required to have been submitted, when it was actually submitted, when it was consented to and if that consent was qualified or not and finally the same information with regard to revisions of the original programme.

Other than acting as a record of facts this information will provide an indication of the Contractor's willingness and ability to adhere to one of its most important obligations and responsibilities i.e. the need to plan the works in such a way as to ensure completion within the contract period.

In the event that the Contractor consistently delays the submission of programmes and that the consent of these programmes is qualified the Project Engineer should be concerned about the Contractor's ability to complete the Works within the contract period. In this case it is recommended that a meeting be convened with the Engineer, Contractor and Project Engineer to discuss the problems underlying the Contractor's failure to properly programme.

7.8.3.5 Section 5 - Materials Report

This section comprises the following sub-sections:

5.1 General
5.2 Quarries and Borrow Pits
5.3 Testing of Materials
5.4 Materials on Site

The information contained in this section is the only tangible evidence which ERA has to prove that the required construction standards are being achieved. Monitoring of the information provided should be done thoroughly and general trends noted and queried. In addition it will indicate how far ahead the Contractor and Engineer are "thinking" i.e. has sufficient material been identified and proved to ensure that the Works will proceed without delay. It should be remembered that the information in this section will not be limited to road building materials but will also include materials such as road marking paint, road signs, bridge bearings, reinforcing steel etc.

Although this section should not contain information related to lack of access to borrow pit and quarry areas *(this should be reported under 2.3 above)* it is possible that the Engineer may include such information under this section. A careful review of the information under this section needs to be made in order to ensure that there are no problems related to access. In the event that there are, this should be treated in the same way as detailed under 2.3 above.

General

The Project Engineer will be required to review information related to the principal road building materials, their sources, properties and required quantities. This information is likely to be fixed for the duration of the contract. Particular notice should be taken of changes as they are likely to indicate that there has been something "wrong" with the design or that something "unforeseen" has arisen, both of which could result in claims and will most certainly result in additional costs and maybe even delays.

In the event of this happening the Project Engineer should investigate the reasons for the changes, their effects on the contract duration and cost and possible mitigation measures. All of this information should be reported to the Branch/Division Head and Funding Agency for a decision on how to proceed.

The approval of materials, concrete and asphalt mixes can often take a long time because of unnecessary bureaucratic requirements by the Engineer. Any recorded delays in approvals should be investigated by the Project Engineer, the reasons determined and solutions sought. Where

necessary the Project Engineer should convene a meeting between the Contractor, Engineer and himself to discuss and solve the matter.

Quarries and Borrow Pits

In addition to providing a heading for the recording of factual data on the location of approved borrow pits and quarries this head also provides for details of how materials are to be handled and transported and how borrow pits and quarries are to be explored and rehabilitated. It is suggested that the borrow pit and quarry development and rehabilitation plans as required under environmental considerations should be included under this heading.

Once again the Project Engineer should take note of any delays in approval of borrow pits and quarries and investigate them as described under the heading above.

Testing of Materials

The information under this heading will highlight the level of testing and supervision being carried out by the Engineer. It is the Project Engineer's duty to ensure that the Engineer is doing sufficient testing to ensure the Contractor's compliance with the specification. The specification is quite specific with regard to the frequency and type of testing for each type of material. The Project Engineer is therefore simply required to compare the actual volume of testing done during anyone month with the specified volume. The Engineer should adhere to the volume as specified. An excess of testing is likely to result in a claim by the Contractor for interference or delays and a shortage is likely to indicate that insufficient control is being exercised.

The Project Engineer should also ensure that the Engineer records failures as well as successful tests as these will highlight the existence of a problem, either with the materials in a particular area or with the Contractor's method of working and or control. In either case reasons for the failures should be sought and addressed.

Materials on Site

The information recorded under this heading will relate to materials brought onto site for inclusion in the works e.g. cement, bitumen, reinforcing steel etc. In general terms the Project Engineer should satisfy himself that the Contractor has on site sufficient quantities of materials to ensure that the works are not delayed. In this regard the Project Engineer will have the benefit of local knowledge of supply difficulties and problems and should ensure that both the Engineer and Contractor are aware of any such difficulties and that these are taken into consideration e.g. cement and or fuel shortages, import difficulties and delays etc.

The Project Engineer must ensure that at the end of the contract there are no materials on site i.e. that they have all been built in. In the event that some materials do remain "on site" the Project Engineer should ensure that there is a justifiable reason for not having built the materials in e.g. a change of design after the materials were ordered and that all such materials are handed over to ERA. In this case there may well be some additional payment to be made to the Contractor for such materials as they will only have received some percentage of the actual cost of the materials and transport.

7.8.3.6 Section 6 - Progress of the Works

This section comprises the following sub-sections:

6.1 Narrative Report
6.2 Progress by Category
6.3 Sub-Contracts
6.4 Problems/Solutions and Action Taken

6.5 Progress Straight Line Diagram
6.6 Progress Bar Chart with "S" Curve
6.7 Key Rates of Construction Table

This is most probably the most important section of the Monthly Report as it details the progress of the Contractor in relation to their programme which will, in turn, indicate the likelihood of delays and claims. The conditions of contract usually only require that a Contractor complete the works within a specified period. Accordingly until such period has elapsed the Contractor cannot have failed even though it may not have adhered to its programme. In practice, however, the Supervising Engineer is empowered to demand certain actions prior to the end of the period if it becomes apparent that it is impossible for the Contractor to complete on time. This is a very complicated contractual issue and must be closely monitored at all times. It is essential therefore that the ERA Project Engineer monitor progress and actions taken by both the Contractor and Consultant to satisfy himself that the project will be completed on time and if not satisfied must insist that the Consultant take whatever action is necessary.

The most important aspect of the information recorded under this heading is that it must detail the actual progress of the Works in relation to the progress which should have been achieved according to the Works Programme. The recording of progress by itself is almost worthless as it provides no indication of whether the works will be completed on time or not.

The ERA standard report format requires that this information be provided in a tabular/programme format. The reason for this is that it provides a relatively easy to understand and analyse diagrammatic representation of the progress of the works and time remaining.

This section also contains information on revised completion dates. It is essential that the Project Engineer be aware of all such revisions to the completion date as well as their financial implications as the ERA contracts under the RSDP programme effectively do not have any contingency for additional expenditure over and above the Ceiling Amounts.

The Project Engineer should also ensure that he has a soft copy of the programme in order to permit the calculation of the effect of any proposed changes on the programme before actually taking the decision to implement such changes.

Narrative Report
Progress by Category
Problems/Solutions and Actions Taken

Under these three headings the Project Engineer must ensure that all progress is on or ahead of programme and that if it is not, an explanation for the delay is given and concrete action proposed or already taken.

In the event that no explanation is given the Project Engineer must immediately investigate the reasons and ensure that the necessary action is taken by both the Engineer and the Contractor.

Sub-Contracts

The information required to be included under this heading refers to the details of all approved sub-contractors.

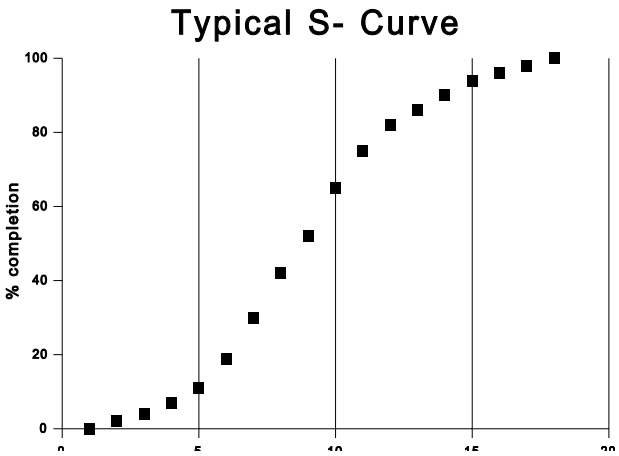
In this case the Project Engineer should ensure that all Sub-contractors referred to have been approved by ERA and if not that the matter is resolved immediately. This is extremely important as the use of an unapproved subcontractor or a contractor which is unacceptable to either ERA or the Funding Agency could result in refusal to pay or worse mis-procurement.

Progress Straight Line Diagram

This diagram provides a quick and simple over view of the actual status of the progress of a number of the principal categories of work.

Progress Bar-Chart with S-Curve

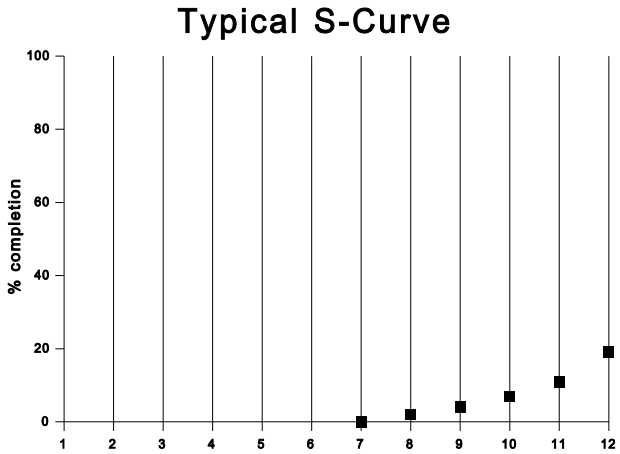
This chart includes details of the planned and actual progress of the works in bar chart form as well as planned and actual financial progress in S-curve form as per the adjacent example for an eighteen month contract.

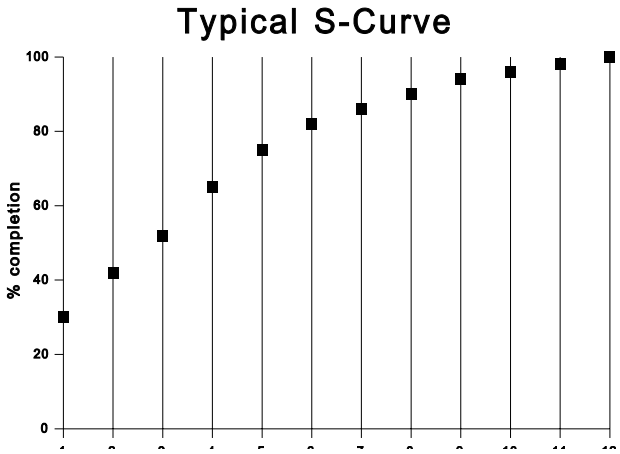


The graph indicates the rate of completion of work during the first few months as being slower than the average (straight line) rate necessary to complete the works within the contract period. This reflects the period during which the site is being established and the contractor is gearing up to full production. The rate of completion of work then increases beyond the average rate during which time the Contractor makes up for time lost during the first few months. Then, having completed sufficient work to ensure completion on time, the rate of completion of work again drops below the average indicating the completion of the works and de-establishment of the site. If the graphs of Planned Physical Works and Value of Work Done do not reflect an S-curve format a reason should be sought from the Consultant as there could be a fault in the Contractor's planning.

The most likely reason for not reflecting an S-curve format is that insufficient attention was paid to the programming and that an average production rate has been assumed by dividing the work and value thereof by the contract period in order to obtain a rate and value per month. This would result in straight line graphs in both cases. There may, however, be valid reasons for deviating from the S-curve e.g. large advance payments, high cost items delivered to site early in the contract, an agreed payment schedule based on time rather than work done etc.

An important point to remember is that the S-curve format will only be apparent if the graph includes the full construction period. If the construction period is longer than twelve months or spans a year end the S-curve may be divided into two graphs resulting in, at first sight, a curve which is not an S-curve. This is demonstrated by reproducing the typical S-curve below assuming a





split graph.

A number of general features of the graphs which require consideration, when they occur, are discussed below.

1. The Contractor is generally required, in terms of the contract, to furnish the Consultant with a programme detailing planned progress and a cash flow. The acceptance of this programme and cash flow, by the Consultant, should confirm the reasonableness of them. This may, however, not be the case and the Project Engineer must therefore ensure that he satisfies himself of the reasonableness and acceptability of the programme and cash flow. It is conceivable, for instance, that the Contractor intends executing the works in an order which is quite sensible logistically but which does not suite ERA's delivery obligations or availability of funds.

2. The issue of cash flow requires careful consideration as there is a tendency to believe that the Finance Division is divorced from the day to day management of projects and that they will simply pay all certificates when instructed to do so. The arrangements necessary for making funds available from the GoE or Funding Agencies are considerable and time consuming. It is essential, therefore, that the Finance Division be kept informed, at every stage, of the financial status of the project. This includes the requirement for advising them of all contract amendments, variation orders, claims and potential claims (time or money). Failure to do this may result in funds not being available when required and consequent claims and/or delays.

3. The graphs of actual Physical Works and actual Value of Work Done may fall below the graphs of Planned Works or Value. This indicates a failure by the Contractor to meet its planned rates of production for some reason which must be determined by the Project Engineer as this is the first indicator of a delay in the project completion date. There could be any number of reasons for the failure to meet the planned production rates. A few of these are given below to highlight their diverse nature and the possible consequences.

    - A physical problem related to storms, rain, flooding etc. A problem such as this requires comprehensive details of the occurrence of the event, details of the nature of any damages, details of the nature of any repair works, estimates of the time required to rectify, notification to the project insurers. A problem of this nature will result in a claim (usually time as money would be an insurance matter) from the Contractor and the Project Engineer must ensure that all actions are taken.
    - Default on the part of ERA. In a number of contracts ERA undertakes to provide offices, vehicles, personnel, make payments, give access to sites, arrange for other GoE departments to carry out tasks etc. If ERA has failed to fulfill a contractual obligation such as those mentioned here a claim (time or money) will result from the Contractor, again the Project Engineer must be aware of this and ensure that ERA fulfills its obligations.
    - Default on the part of the Consultant. The usual type of delays of this nature relate to the late issue of drawings, delays in approval of rates/alternative proposals/inspections etc. Delays of this nature reflect badly on the Consultant. They are, therefore, unlikely to fully inform ERA and it is only by questioning that the reasons will be made known. ERA will be required to grant any claim (usually time but could also be money) made in regard to delays of this nature with their only recourse being to sue the Consultant for compensation.

- Default on the part of the Contractor e.g. slow establishment of plant, equipment, personnel etc. on site, poor workmanship requiring re-work, late delivery of materials etc. In general, compensation for delays of this nature is not claimable from ERA. Such delays could and often do result in the imposition of Liquidated Damages. It is therefore essential that proper records be kept to document such occurrences and prevent the Contractor from seeking compensation under some other pretext. The PE has the responsibility to see that the Engineer keeps these records.
- Because of non performance of an ERA nominated supplier or sub-contractor in which case ERA will be responsible for the delay.

4. The graphs of actual Physical Works and actual Value of Work Done may lie above the graphs of Planned Works or Value. This indicates that the Contractor is working quicker than planned for some reason. Although this would appear to be a favourable state of affairs it may not suit ERA and the reason must, again, be determined by the Project Engineer. There could be any number of reasons for early completion a few are given below to highlight the diverse nature of possible reasons and the possible consequences.

   - The contract may include a Bonus Clause entitling the Contractor to additional payments for early completion. If it becomes apparent that the Contractor is likely to become eligible for such payments it is essential to advise the Financial Branch of the likelihood of additional payments.
   - On the basis of the Contractors planned programme of works the Consultant would be entitled to issue information on the basis of the programme. It is conceivable that a contractor may wish to take advantage of the vulnerability of the consultant by accelerating the rate at which work is completed to the point where the consultant is unable to deliver information sufficiently quickly and the contractor could then claim (time or money). Although there are other considerations in a claim of this nature it serves to illustrate the point.
   - The Contractor may believe that early completion would entitle him to payments for acceleration.

   - ERA may not be in a position or prepared to take over the works earlier than originally anticipated and if this is the case and the Contractor looks like completing early he should be informed.
   - The project cash flow may not permit the disbursement of funds in advance of the planned rate.

   The above comments on early completion are not intended to imply that early completion is undesirable but merely to indicate that even when a project is proceeding well the implications of the progress need to be considered.

5. It is necessary to note the general trend of the graphs as they will clearly show if performance is improving or not and will provide advanced notice of likely deviations from the Planned levels of production. This notice will allow the Project Engineer to take the necessary action pro-actively rather than retro-actively

A full explanation of the Chart has been included in Appendix 2 to this document.

Key Rates of Construction Table

This table reflects the rates of progress in terms of actual quantities of work done on each of the most important tasks. This will allow the Project Engineer to focus in on the actual tasks which are causing delays.

7.8.3.7 Section 7 - Supervision and Monitoring

This section comprises the following sub-sections:

7.1 Narrative Report
7.2 Staffing Matters
7.3 Survey Work
7.4 Design and Specification Modifications
7.5 Site Meetings
7.6 Site Visits
7.7 Key Correspondence

The information reported under this heading relates to the Supervision contract and not the Works contract. It is included in order to provide the Project Engineer with information to facilitate an evaluation of the quality of the service being provided by the Engineer.

Many of the Engineer's actions e.g. issuing of information, responding timeously, certifying etc. are effectively taken on behalf of ERA and therefore, if the Engineer delays any of these type of actions and a claim results from such delay, ERA is likely to be held responsible. The Project Engineer must, therefore, at all times, ensure that the Engineer acts in accordance with the conditions of contract and does not unnecessarily delay any aspect of the works for any reason. It is an unfortunate reality that Supervising Engineers often introduce unnecessary bureaucracy into the management of projects and this can result in ill feelings, bad relationships and difficult working environments on site. This must be avoided at all costs.

In reviewing the information under this heading the Project Engineer should take as much note of what is not reported as what is reported. The Engineer and his organisation are "only human" and are unlikely to present any information which is likely to reflect badly on them. Where occurrences and events are reported on but not explained, the Project Engineer should investigate the reasons as such an omission might well indicate some problem within the Engineer's organisation.

Narrative Report

Under this heading the Engineer should report on the principal activities undertaken by his staff during the reporting period. This will relate to the direct supervision of the works, testing undertaken, approvals granted, meetings held, discussions held, agreements reached and not reached, claims resolved etc.

Staffing Matters

The successful implementation of projects can be severely affected by the absence of the Engineer's staff and, whilst, the Engineer's staff might well be entitled to leave and periods of absence from the site these should only occur at the convenience of the works as programmed. The Project Engineer should ensure that the Engineer always requests ERA's approval for periods of absence and that in making such requests the Engineer should provide full details of the works which will be undertaken during those periods and how the project will function in the absence of that person.

The Project Engineer should also ensure that the tabulated staffing information matches that reflected in the Engineer's invoice.

Survey Work

The general survey of the site i.e. creation of a DTM and or cross sections in order to establish the base levels and confirm the design, often leads to disagreements between the Contractor and the Engineer. Unless the contract specifically states that the Contractor is required to survey the site in order to provide information to the Engineer, the Engineer cannot demand information from the

Contractor as a prerequisite to providing construction information. This information should have been done as part of the design process. In the event that the Contractor is required to provide survey data, he should be instructed to undertake the work and be paid for doing the work.

The information under this heading should be carefully studied by the Project Engineer in order to ensure that no delays in the provision of construction information are introduced by the Engineer as a result of survey data.

Design and Specification Modifications

The Resident Engineer and his staff are rarely involved in the actual design of the project. They should not, therefore, be permitted to make changes to either the design or the specification without direct reference to the person responsible for that aspect of the design. Further, any request/recommendation of the site staff to modify the design or specification must be supported by the written justification of the design engineer as well as the financial implications of such modification and a proposal for how the works are to be funded.

Site Meetings

Under this heading the Engineer is required to record the meetings which have taken place during the reporting period.

Copies of the minutes of the meetings are required to be included in the report under section 10.

Site Visits

The site is often visited by people not directly involved in the project e.g. ERA senior management and board members, Ministers, Funding Agency Representatives, Local Authorities, Engineer's senior management etc. During these visits the people often express opinions, make suggestions and attempt to give instructions. It is essential that everyone responsible for the implementation of the project realise that only the persons designated in accordance with the conditions of contract are authorised to issue instructions and that any action required, following such a site visit must only be implemented after having followed the full project approval process. Failure to do so might well result in unexpected expenditure or the non availability of funds.

The Project Engineer should always enquire about any visits to site by persons other than those directly involved in the project.

Key Correspondence

The Engineer is required to include a schedule of key correspondence issued and received during the reporting period. Although the ERA report format does not specifically request a schedule of outstanding responses/action required by ERA it is strongly recommended that such a schedule be included in the report as an aide memoir for the Project Engineer.

In reviewing these schedules, the Project Engineer should look for correspondence topics with which he is not familiar and where this occurs he should investigate the topic.

7.8.3.8 Section 8 - Financial Report

This section comprises the following sub-sections:

8.1 Financial Statement
8.2 Variations
8.3 Payments Made
8.4 Cash Flow

There are three important maxims to be considered under this section viz.

- The Contractor will not work without being paid,
- The Contractor only gets paid for work done,
- The Value of the contract may not exceed the contract amount without ERA's approval.

This section and the relevant tables contain the information which addresses the three points above. The construction contracts which ERA enters into require the payment of monies due within a specified time. Failure to honour this will result in additional payments to the Contractor by ERA and can further lead to project delays if payment is delayed excessively.

The responsibility for ensuring that payments are made timeously and that unnecessary delays are avoided is that of the Project Engineer. As with the receipt of reports, the forwarding of a certificate to the Finance Department is the beginning and not the end of the Project Engineer's duty.

There will generally be a close correlation between the value of work done and the total progress achieved. It is therefore important to monitor the total value of work done on a monthly basis against the total progress reported.

The Ceiling amounts established by ERA reflect the total value of funds available for a particular project. Project funding is generally on an individual project basis for a fixed amount and it is therefore very difficult for ERA or the GoE to obtain additional funds for a portion of a project. Project expenditure must therefore be limited to the ceiling amounts by constantly monitoring the information contained in this section.

Financial Statement

It is essential that from the commencement of the project the Engineer maintains accurate and up to date estimates of the final contract amount and value of the Supervision Contract. The Project Engineer should monitor these amounts and immediately that the estimates indicate a sum in excess of the budgets investigate the reasons and if justified advise all concerned parties and put into motion the processes necessary for the allocation of additional funds.

Variations

Variations will also be reported on under this heading. The Project Engineer should carefully monitor all expenditure under Variations in order to ensure that they are justified, approved and properly included in the contract.

Payments Made

The ERA report format includes as Figure 8.3 a format for the reconciliation of invoices received and payments made. This format does not however consider the possibility of both ERA and a Funding Agency making payments in each of the currencies of payment i.e. it assumes that only two payments will be made for each invoice. In reality there are more likely to be three or four payments for each invoice. A reconciliation format which does provide for this has been included in Appendix 3.

The Project Engineer must carefully monitor the payment periods in order to determine if there are any delays in payment. In the event that there are, he must investigate the reason and implement measures to avoid the delays.

Cash Flow

The ERA report format requires the cash flow to be reported on twice i.e. under Figures 6.6 and 8.4. The reason for this is not clear. It is suggested that only one report is necessary.

The interpretation of the cash flow is addressed under 6.2.6 above and 7.12 below.

7.8.3.9 Section 9 - Meteorological Report

This section comprises the following sub-sections:

9.1 Narrative Report
9.2 Monthly Rainfall
9.3 Rainfall to Date

This information is for record purposes in the event of a claim (usually time) for delays due to exceptionally inclement weather. In this regard it is essential that the Normal Average rainfall for the area be established as it will form the bench mark from which the claim will be evaluated. The Project Engineer should satisfy himself that the Consultant is recording this information and that the points at which the rainfall is measured are sufficient in number to be representative of the site. It is suggested that the location of rain gauges and the areas of the project which they represent should be agreed at the commencement of the project.

This information is for record purposes in the event of a claim (usually time) for delays due to exceptionally inclement weather. In this regard it is essential that the Normal Average rainfall for the area be established as it will form the bench mark from which the claim will be evaluated. The Project Engineer should satisfy himself that the Consultant is recording this information.

7.8.3.10 Section 10 - Environmental Report

As previously stated the standard ERA report format does not require any environmental and social reporting. This must obviously be included as it forms an integral part of the project. It is suggested that the following be reported on at least the following:

- Implementation of the Environmental Management Plan
- Implementation of HIV/AIDS Awareness and Prevention Campaigns
- Social Issues including employment conditions, labour standards and gender issues
- Local authority and community liaison
- Traffic Management
- Safety

7.8.3.11 Section 11 - Appendices

This section comprises the following sub-sections:

11.1 Contractor's Personnel
11.2 Status of Construction Equipment
11.3 Consultant's Personnel
11.4 Minutes of Meetings
11.5 ERA/RSDP Status Report
11.6 Accident Record

With the exception of 11.5 all of the sub-sections have been addressed under section 2.2 above.

7.8.3.12 Section 12 - Photographs

The photographs included in the monthly report are included to provide a general "feel" for the nature of the site and the works being undertaken. Because of the small number included in the report they cannot hope to provide a true record of the works.

The Engineer is, however, required to maintain a photographic record of the project and the Project Engineer must ensure that this record is being maintained, that all of the photographs are catalogued and referenced to their exact location. He must also ensure that the photographs detail

the progress of the works and that there is a record of any particular occurrence e.g. flooding, collapse, accidents etc.

7.8.4 Initiating Action

The first paragraph of section 2.2 " Interpreting the Monthly Report" makes a point which is worth repeating here viz. " The receipt and review of the Monthly Report is the START and not the end of the project monitoring process". The interpretation of the Monthly Report in the light of this and the points above will highlight the necessary action required by the Project Engineer if he is to properly monitor and control the project. This action takes four basic forms, namely

- The request for explanations from the Engineer.
- Responses to requests received from the Engineer.
- Advising Finance Division.
- Communication with other GOE organisations.

Each of the above forms of action will now be addressed and examples of the type of correspondence necessary for each given.

7.8.5 Request for Explanations

Having reviewed and analysed the Monthly Report as described above a number of queries are likely to have arisen. As stated above, answers to these queries must be obtained from the Consultant. These requests for explanations will be either written or verbal depending on the importance of the query. In general all communication whether written or verbal should be recorded and filed with the applicable contract data.

Examples of the type of correspondence necessary for this form of action are

1 The trend of the S-Curve in Fig 6.6 has been below that of the planned progress for the last two months. Please furnish details of why the progress is less than planned and also advise what action the Contractor is taking to ensure completion on time.

2 We are pleased to note that progress is ahead of schedule, however, we wish to advise you that the second disbursement of funds from the Donor will only be received in February and we are accordingly only able to commence payments in February, as agreed.

3 We note from section 2.1 of your monthly report that only 2.1 km of surfacing was done. This does not agree with the amount for this item in the latest certificate. Please investigate this anomaly and advise us of the outcome.

4 We note from your report that one week has been lost due to rain. You have provided the rainfall figures but have not advised ourselves of the Contractors intentions with regard to this delay. Please advise soonest.

7.8.6 Responses to Requests

Through the General Conditions of Contract ERA effectively delegates its powers and authority to the supervising Consultant for the implementation of the project. In general, therefore, there is little or no need for the Consultant to refer to ERA until the completion of the project. In practice, however, the Consultant will usually consult ERA and the Contractor before making any decisions as this will generally avoid the chance of his decisions being disputed. ERA is, therefore, likely to receive a number of requests from the Consultant for confirmation or acceptance of some or other

proposed decision. In all cases ERA is obliged to respond with a minimum of delay. Although these requests will always be in writing the Consultant may make mention of outstanding items in the Monthly Report in order to remind ERA. ERA's action or response must always be in the form of a written communication. Examples of the type of correspondence necessary for this form of action are

1 We confirm that the site will be made available for construction with effect from.....

2 We believe that in your assessment of the Contractors claim (time or money) you have not considered XYZ and request that you do so prior to making a ruling.

3 We concur with your assessment of the new Overhaul rate.

4 Further to your submission of the Contractor's alternative proposal we confirm that we have no objection to the use of Rubberised Bitumen.

5 The Contractor's proposed site agent has insufficient relevant experience and is accordingly not acceptable. Please request the Contractor to submit another proposal.

6 In response to your query we wish to advise that payments to the Contractor will resume in June following receipt of the next funding allocation.

7 Following the non completion of the contract by the required date you are hereby instructed to deduct liquidated damages with effect from.....

7.8.7 Advising Finance Division

It is important to realise that the CCID must be as interested in and as familiar with the financial aspects of the project as Finance Division is. The ERA CCID is responsible for ensuring that every project is completed on time and within budget (ceiling amounts). It is necessary for both CCID and Finance Division to have up to date financial records of the project.

These financial records are generated by two sources viz. the Consultant and Finance Division i.e. the Consultant produces the figures which demonstrate how much is due for payment, how much has been disbursed and how much remains to be disbursed while Finance Division produces the figures which demonstrate how much of the ERA and Donor funding has been received, disbursed and remains. A constant flow of information from the CCID to Finance Division and vice versa must therefore exist. Examples of the type of correspondence necessary for this form of action are

1 We wish to advise you that contract 123/CON/95 has been let to ABC Contractors for the sum of Birr 380 000 000. The contract commences on 1/2/06 and the first payments will commence in April 06. We trust that you have received the contract document and are prepared to commence disbursements.

2 We attach for your reference and action this months Monthly Report for project XXX please note that the contract is running behind programme and that payments are therefore likely to continue until December.

3 We wish to advise you that the Contractor has submitted a claim for additional costs. We believe their entitlement to be approximately Birr 3 400 000 please make a provision for this additional payment in June. We will advise you of the exact figures when these are finalised. Please note further that this amount will be funded from the contract contingency amount.

7.8.8 Communication with other GOE Organisations

It is usual for ERA to liaise with other GOE departments and organisations during the implementation of projects. This liaison and the action required of the other organisations are usually critical to the project programming. It is also the area where ERA is the most vulnerable as failure by the other organisations will result in ERA defaulting on the contract and hence being liable for the granting of claims. It is therefore imperative that the Project Engineer anticipate these problems and resolve them.

Examples of the type of correspondence necessary for this form of action are:

1 We wish to advise that we are constructing a XXX and will require a three phase domestic electrical supply on or before July. We attach a drawing for your information. Please advise what the cost of the supply will be and approximately when it could be installed.

2 We wish to advise that mines have been detected on the construction site of the new XXX road. You are accordingly requested to arrange for an inspection of the site. Please note that time is of the essence as this project is required to be completed before the rainy season.

3 We wish to remind you that the compensation to be paid to those land owners on the XXX project has still not been paid. The payment of these monies was conditional on them moving. Construction is due to commence next month and you are accordingly requested to give this matter your urgent attention.

7.9 ERA PROJECT ENGINEER'S REPORTS

We have seen from the above that the responsibilities and duties of ERA during construction are limited to giving possession of the site, paying for work done, responding when called upon to do so and taking over the completed works. We have also seen that the Engineer is contracted to supervise the construction and that ERA's supervision is limited to satisfying them that the Engineer is "doing a proper job".

Under 7.4.3 above it was suggested that the best way to ensure that the Engineer is doing his job is to review in detail the site filing system and records. In support of this ERA in 1999 introduced a reporting format for the use of Project Engineers visiting sites. The intention being that they would submit the reports to senior management who in turn would identify areas requiring action. The reporting format is comprehensive and if utilised will highlight all areas requiring action. At the time of introduction, it was intended that this reporting format should have been used on the RSDP projects.

The 1999 "Guideline on Reports from Project Engineer to ERA Management for Construction Contracts" has been included as Appendix 7-17 - Guideline CA9 PE's Site Visit Reports.

7.10 CONSULTANT'S PERFORMANCE EVALUATION

It is normal following the completion of a project to evaluate the performance of the Supervising Consultant in order to determine what was done well and what could be done better in the future and finally whether ERA would like to utilise the services of the consultant on future project.

Unfortunately, however, this is not an exercise which can only be considered at the completion stage. It is an exercise which must be undertaken throughout the project period.

A full set of guidelines has been prepared on this subject and is included in Appendix 7-18 - Guideline CA10 Consultant's Performance Evaluation.

7.11 WORKS PROGRAMME

7.11.1 Programming

Project Programming is the scheduling, on a time scale, of the tasks necessary to achieve a specified goal and it is this programming which facilitates the monitoring of the technical, chronological and financial progress of a project in relation to what was pre-planned.

Prior to the development of a programme it is necessary to determine and specify the factors, forces, effects and relationships necessary to achieve the specified goal. This planning phase is most important and requires the

- identification of the individual tasks to be undertaken
- determination of the duration of each task
- determination of the order in which the tasks are require to be undertaken
- allocation of the resources necessary for each of the tasks
- definition of the cost of each resource
- definition of the various project resource calendars

Having defined the tasks, their durations, the order in which they are to be undertaken and the resources to be allocated to each task these are then combined and presented diagrammatically, and it is this diagram which is known as the project plan or programme. Such a programme may be generated by any one of a number of commercially available software programs or manually. Today ERA, its Consultants and Contractors usually use computer programs such as Primavera or Microsoft Project.

7.11.2 Project Management via Project Programmes

Using a project programme as a project management tool requires the constant comparison of actual and planned progress. Where the actual and planned progress is different it will be necessary to modify the timing of implementation of tasks, to ensure adherence to the originally planned technical, chronological and financial programme. The relationship between these three elements differs in every project and determines the kinds of problems which will be encountered and the solutions which may be implemented. Knowing where the project's limitations and flexibility reside makes it easier to plan and manage the project.

A project management cycle, considered in relation to a project programme, could be defined as follows:

- Establishment of the Programme
- Implementation of the Programme
- Monitoring and Controlling the Programme
- Implementation of Remedial or Corrective Action
- Amendment of the Programme as Necessary

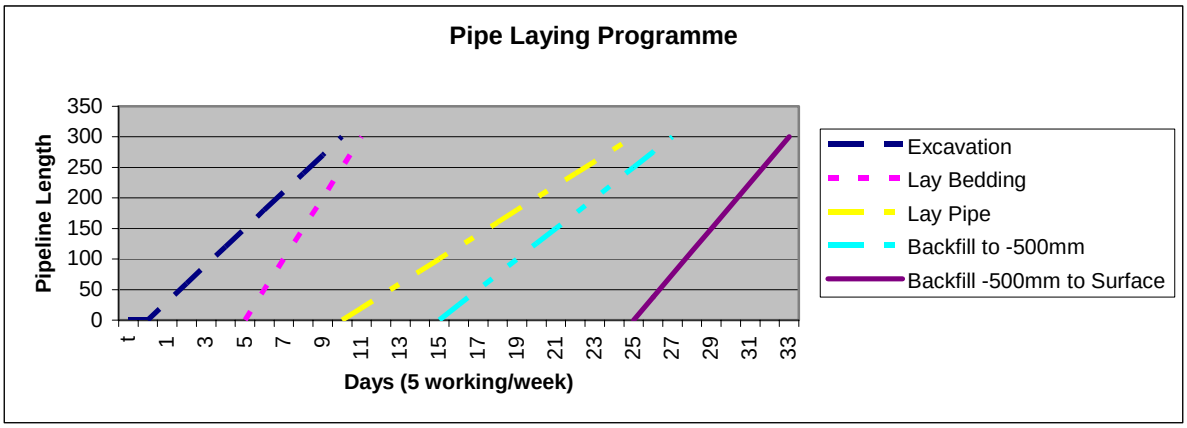
7.11.3 Programme Formats

Bar charts are the simplest form of programming and have been in use the longest of any of the systems that are available. The forerunner of the bar chart was the Gantt chart, the name of which is still retained today for certain types of bar charts. Bar Charts basically depict the progress of individual tasks against time, as shown in the pipe installation programme below.

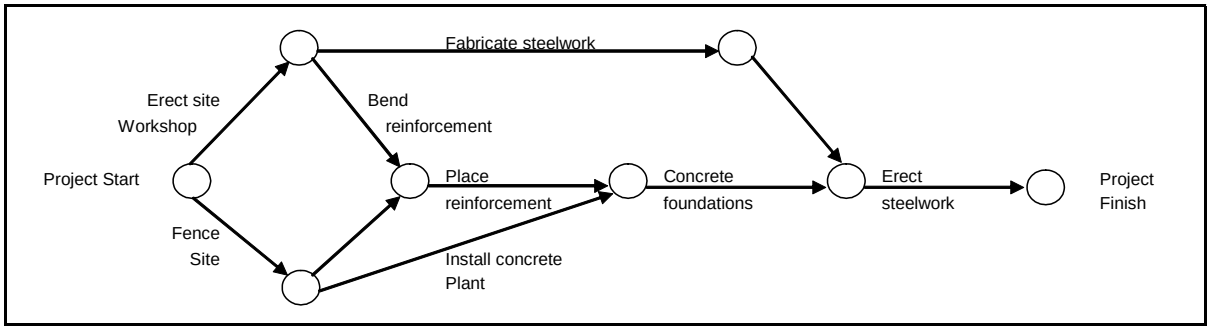
Item	Description	Weeks						
		1	2	3	4	5	6	7
1	Excavate Trench (300m)							
2	Lay Bedding							
3	Lay Pipes							
4	Backfill to -500 mm							
5	Backfill -500mm to Surface							

Bar charts offer the advantage of being cheap and simple to prepare, are easy to read and update and are readily understood by anyone with a basic knowledge of the capital projects business. In many cases the final product of computerised critical path method programmes is in the form of a bar chart. The main disadvantage of the bar chart is its inability to show enough detail to cover all the activities on larger, complex projects i.e. the programmes become physically too large to be manageable.

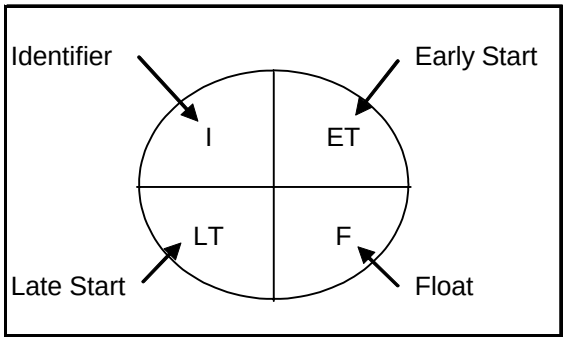
A variation on the bar chart which is used on linear projects is the representation of the progress of individual tasks in relation to both time and distance. The same tasks and durations as are detailed on the above bar chart have been detailed in this format below.



In the late 1950s the US Navy developed the PERT *(Program Evaluation and Review Technique)* system and Du Pont the CPM *(Critical Path Method)*. The CPM is essentially the representation of a project plan by a schematic diagram or network that depicts the sequence and interrelation of all the component parts of the project, and the logical analysis and manipulation of this network in determining the best overall program of operation. The above two programming examples are very simple and linear. The CPM is better suited to more complicated projects with parallel and linked tasks. A simple example of a CPM network is shown below.



Each of the node points is then uniquely identified and allocated the earliest and latest starting times which would in turn permit the mathematical calculation of the overall project duration and the shortest possible time, or Critical Path, in which the project could be implemented. The float is the difference between the early and late start times.



In doing the above it must be remembered that the primary objective will most likely be to complete the works as quickly as possible within the allocated project budget.

In order to facilitate the preparation, analysis and management of programmes some general terms used in programming are explained below:

Programme. A diagrammatic representation of the timing and sequence of tasks necessary to achieve a defined objective. A programme consists mainly of tasks, task dependencies, durations, constraints and time dependent project information. It may, and in the case of Construction contracts usually does, also include allocated resources and their costs.

Tasks. Those individual and unique activities necessary for the achievement of a defined objective. Each Task is required to have a defined beginning and end.

Task Dependencies. The nature of the relationship between two linked Tasks e.g. Task B cannot start until Task A finishes or Task B cannot finish until Task A finishes etc.

Duration. The total span of active working time required to complete a Task. This is generally the amount of working time from the start to finish of a Task, as defined by the project and resource calendar.

Constraints. A factor that will limit the project's management team's options e.g. a predefined budget.

Resources. People, equipment and material used to undertake a project's Tasks.

Objectives. The quantifiable criteria which must be met for a project to be considered successful. Objectives must include at least cost, time and quality measures.

Calendar. A project calendar is a collection of each of the defined working periods for each of the assigned resources

7.11.4 Programming Planning

Under Section 7.11.1 above the following were identified as being necessary for the preparation of a programme:

- identification of the individual tasks to be undertaken
- determination of the duration of each task
- determination of the order in which the tasks are require to be undertaken
- allocation of the resources necessary for each of the tasks
- definition of the cost of each resource
- definition of the various project resource calendars

7.11.5 Identification of the individual tasks to be undertaken

The identification of individual construction tasks or activities is usually fairly straight forward because the nature of the work itself lends itself to dissection into conveniently sized and discrete packages. In the case of roadwork the number of activities is relatively small, but is spread over long sections of the site. A number of these activities will be in progress simultaneously over long periods of the contract. This requires that more than the usual attention be given to overlapping of activities and breaking down the job into appropriate lengths, for effective progress monitoring purposes.

Notwithstanding the availability of computers and programme consultants, the Contractor will often not put the amount of effort into the preparation of an effective works programme or updating, that the Engineer considers necessary. The important thing in this regard is to specify exactly what is actually necessary i.e. the form of programme, the degree of detail and when updating is required. In doing so it is important to always keep in mind the "KISS" principle i.e. Keep it Short and Simple. One should not include or insist on unnecessary or overly complicated details.

The following table offers an example of a KISS and non KISS identification of the tasks required for a pipe laying exercise *(see Section 7.11.3 above).*

Whilst the non-KISS activities do need to be undertaken they are not necessary for the overall pipe laying programme. In the event that it is felt necessary to programme the additional items, they could be presented as sub-activities which would permit them to be "rolled" up and effectively hidden. This would have the effect of simplifying the programme as presented, whilst still considering these activities.

KISS	Non KISS
Excavate Trench	Mobilise Backactor Set out Trench Excavate Trench
Lay Bedding	Order Bedding Sand Deliver Bedding Sand Lay Bedding
Lay Pipes	Order Pipes Deliver Pipes Order Caulking Material Deliver Caulking Material Lay and Caulk Pipes
Backfill to -500mm	Mobilise Plate Compactor Backfill to top of pipe Backfill 1st to 5th Layers
Backfill -500mm to Surface	Backfill layer 1 Backfill layer 2

7.11.6 Determination of the duration of each task

The accuracy of the estimations, guesstimations and or calculations will determine the accuracy of the projects programme. In doing so it is important that any constraints on resources, time, finances etc. be factored into the determination of the time required for each task e.g. if the contractor only has one backactor the volume of excavation per hour or day will be limited to the capacity of the machine.

One should calculate task duration in terms of working days or periods. Just how many of these there might be in any one day, week, month etc. is not relevant at this stage of the programming process.

It is also important that allowances be made for external constraints e.g. transport, inclement weather, importation procedures, etc.

Task	Duration *(per construction unit)*
Excavate Trench	300m @ 3m deep/ 30m per day = 10 d
Lay Bedding	300m x 125mm/50m per day = 6 d
Lay Pipes	300m /20m per day = 15 d
Backfill to -500mm	6000m x 0.125m layer/ 500m per day = 12 d
Backfill -500mm to Surface	600m x 0.25m layer/120m per day = 5 d

7.11.7 Determination of Task order

The above pipe laying example is very simple and it is easy to determine the order in which the various tasks are required to be undertaken. In the PERT/CPM example under Section 7.11.3 above, the order in which the various tasks should be undertaken in order to complete the works in the minimum period is not clear at all, for the project as a whole. However, if one sub divides the tasks into groups it becomes possible to determine the order for each group of tasks and, having done this, and having defined the durations, early and late start dates, orders of precedence etc. it becomes possible to calculate the task order and accordingly the overall project duration.

7.11.8 Allocation of Resources

Having determined what tasks are necessary to achieve the project and the tasks durations *(per construction unit)* it is necessary to allocate construction units *(men and machines)* to each of the tasks.

Again this is a simple example and the allocation of more than one construction unit to each task is not possible. However, on a bigger project e.g. longer pipe line with manholes etc. it may be possible to allocate more than one excavator or pipe laying team in order to speed up the overall process.

Task	Resources
Excavate Trench	1Backactor, 2 Labourers, Surveyor + Assist
Lay Bedding	1Foreman, 5Labourers, Surveyor + Assist
Lay Pipes	1Foreman, Crane, 1 Pipe Layer, 6 Labourers
Backfill to -500 mm	1Foreman, Compactor, 6 Labourers, Laboratory
Backfill -500 mm to Surface	1Foreman, Compactor, 6 Labourers, Laboratory

7.11.9 Definition of Resource Costs

The primary objective of every Contractor is to make a profit and in order to do so it is necessary to ensure that the cost of resources is maintained within the project's budget. These costs will be included in the programming.

Task	Resources	Costs *(Birr/Hr)*
Excavate Trench	1Backactor, 2 Labourers, Surveyor + Assist	Backactor 900, Lab 5, Surv + Assist 25
Lay Bedding	1Foreman, 5Labourers, Surveyor + Assist	Fore 25, Lab 5, Surv + Assist 25
Lay Pipes	1Foreman, Crane, 1Pipe Layer, 6Labourers	Fore 25, Crane 700, PL 15, Lab 5
Backfill to -500mm	1Foreman, Compactor, 6Labourers, Laboratory	Fore 25, Compact 55, Lab 5, Lab 45
Backfill -500mm to Surface	1Foreman, Compactor, 6Labourers, Laboratory	Fore 25, Compact 55, Lab 5, Lab 45

7.11.10 Resource Calendars

The final step in the project programme planning is the definition of the calendars applicable to each of the resources.

In addition it is also necessary to define the project calendar i.e. the days when the project works and does not work.

Resources	Calendar
Backactor	9.5 hrs/day 5 days/wk + 5hrs/Saturday
Compactor	9.5 hrs/day 5 days/wk + 5hrs/Saturday
Laboratory	8 hrs/day 5 days/wk
Surveyor	9.5 hrs/day 5 days/wk
Foreman	9.5 hrs/day 5 days/wk + 5hrs/Saturday
Labourers	9.5 hrs/day 5 days/wk + 5hrs/Saturday

A typically a project calendar would exclude local public, religious and occasionally declared non working days. e.g.

- All Sundays,
- Public Holidays
- If any public holiday falls on a Sunday then the following Monday is a non working day.
- Last Friday of every month 07:00 to 12:00

7.11.11 Project Programme

Having completed the preparatory programme planning it is possible to prepare the actual project programme. The programme planning principles addressed above are common to all forms of programming. Luckily the days of labouriously updating a critical path network programme manually are probably gone forever but the need for accurate input information and correct logic remains. Contract Administrators and Contractors both need to check the network logic, in put data and the output to satisfy them in this regard. It is all too easy to accept impressive looking computer output, as being necessarily correct.

For those contracts requiring the submission of detailed programmes, consideration should be given to specifying that the Contractor is to provide a soft copy of the programme together with the software. This will facilitate evaluation, monitoring and updating. Should some action of ERA cause a change to the Contractor's programme and a claim eventuate, having the Contractor's initial programme, together with each subsequent update, will facilitate evaluation and the achievement of a settlement.

Notwithstanding the availability of computers and programme consultants, the Contractor will often not put the amount of effort into the preparation of an effective works programme or updating, that the Engineer considers necessary. The important things in this regard are, firstly. for the documentation to specify exactly what is required i.e. the form of the programme, degree of

detail and updating required and then to insist on compliance and, secondly, to impress upon the Contractor that the programme should be considered by him as a management tool rather than just something "to keep the Engineer happy".

Should the Contractor not fully comply with the specification, the Engineer and ERA must consider whether or not to treat the non-compliance as a breach. This can be a difficult decision, but in any event, deficiencies should always be recorded in writing and concern expressed.

In some contracts an acceptable standard of programming has been achieved by including provisional pay items, covering the provision and updating of the works programme, in the schedule of rates. This requires tenderers to make special allowance for the cost of programming. It also enables the Engineer to refuse payment, if the work of providing and updating the programme is then not carried out by the Contractor in accordance with the specification.

If this route was decided upon it would be necessary during tender evaluation to ensure that a reasonable sum was included for such an item and that the Contractor does not simply include a nominal amount for the purposes of the tender.

7.11.12 Programme Constraints

It is essential that if ERA or the Engineer are likely to constrain the Contractor's free choice of implementation of the works that they advise the Contractor of this at tender stage or failing this that such constraints, if reasonable, be included in the Contractor's works programme.

A typical example of this is the giving of possession of site. The current ERA system of clearing the Right-of-Way is such that it will in almost all cases lead to delays in giving possession of site. If ERA, really cannot change the present system, then it is essential that ERA advise tenderers that possession of site will not be given on day one and further that they specify a time frame for the granting of possession of site.

Another example might be the Engineer's inability to issue all of the construction drawings on day one. Once again if this is the case then Tenderers must be provided with a drawing issue schedule upon which they can base their tender and programme their works.

In both of the above examples, if a Contractor has now been forewarned then the Engineer and ERA will need to "negotiate" with the Contractor for the accommodation of such constraints, where practical, in the Contractor's works programme.

7.11.13 Monitoring and Recording Progress

Prior to the commencement of the contract the Engineer and ERA need to establish a method for systematically recording the Contractor's progress. The amount of information required should be such as to enable an "as built" programme to be produced, that can be compared directly with the Contractor's works programme. This will facilitate meaningful discussions on progress with the Contractor and greatly assist in the evaluation of any programme related claims.

The progress monitoring system can also be used to record information on the Contractor's resources, the disposition of those resources and factors which could affect productivity and progress.

The system can vary from a handwritten diary with hand marked-up bar chart of progress, to a sophisticated computerised contract activity recording system, which can analyse information and supply various reports including an "as built" programme record. In a typical computerised contract activity recording system, the Engineer's staff use prepared forms to record coded site information,

such as activities in progress, resources used and delay details on a daily basis. This information is then entered daily or weekly into the computer.

Experience has shown that such a system need take up no more time than the traditional daily diary. There is an advantage that if the site engineer enters the information into the computer, as this enables any necessary corrections or amendments to be made and also helps keep the site engineer on closer contact with progress and problems.

Whether the traditional daily diary or a computerised system is used, there is a lot to be said for the records so produced, being agreed between the Contractor and the Engineer as they are prepared i.e. daily or at the most weekly. Having records of works progress and site activities, can be a major factor in preventing disputes from developing and greatly facilitates the evaluation and settlement of claims.

Should a programme-related claim be received late in the contract, and "as built" programme information has not been recorded, it will be necessary to try to reconstruct it from diary and other records. This involves a great deal of work and usually does not result in an "as-built" programme in the required degree of detail or accuracy.

The analysis of a programme-related claim often requires the reconstruction of the programme actually worked on a critical path network basis. This can help determine whether particular activities were critical or not, or whether a particular action by ERA or some other event outside the control of the Contractor, caused delay.

Adequate activity progress records are essential for such analysis. Such records need to be supported with appropriate information, for example why a particular activity was being worked or not worked or why progress was slow.

Care must be exercised in using the word critical in relation to programme activities. An activity need not be critical just because it is the only activity being worked at a particular time. It could be that the Contractor is not able to work on the critical work for some reason, such as equipment breakdown, or it could be that he has his priorities wrong.

Extensions of time are usually only justifiable if a delay for which and extension is valid under the contract, has affected a critical activity i.e. one with zero float.

Progress monitoring and regular comparison with the Contractor's programme is essential for alerting the Engineer to the possibility of time performance problems. It is important to advise the Contractor in writing promptly of concerns over performance, in order to motivate him to improve and to avoid the appearance of acquiescence with poor performance.

7.11.14 Tender Programmes

It is fairly common for ERA to require tenderers to submit programmes with their tenders. However, there are potential problems associated with the submission of such tender programmes and their inclusion in contract documents. Resolving these problems, some of which are listed below, can require a lot of staff time in the evaluation stage:

The main difficulty with tender programmes is that ERA usually does not provide sufficient information to facilitate a fully detailed programme. The tender programmes are therefore often so simplistic and vague as to be almost useless. However, having accepted a tender one has effectively also accepted the programme which will be "carried forward" to the project. Unless ERA's standards are exceptional, the chances of awarding contracts based on programmes containing mistakes, deliberate or otherwise, or in conflict with some provision of the tender documents, are high and the consequences for ERA can be expensive.

For example, the tender documents could provide that a certain part of the site would not be made available to the Contractor until a particular date (or as is the case at present not provide that), and yet the tenderer might base his programme on the site being available several months earlier. If this is not detected at tender stage and rectified prior to award, ERA could well become responsible for delaying the Contractor, if they do not make the site available when indicated on the Contractor's tender programme.

Tender programmes are usually sought:

- to provide evidence of understanding of and compliance with the contract requirements, dates and restraints
- to provide evidence that the tender has been properly thought through and that the appropriate resources are proposed to achieve timely completion
- to establish the Contractor's intent, with regard to the programming of the Works at the time of tendering i.e. the programme upon which he has based his tender

Should ERA require a tender programme, but exclude it from forming part of the contract, it can still have a major influence on the outcome of a programme related claim. It is therefore prudent to always treat a tender programme as a document that has the potential to cost ERA a great deal of money, if it (ERA) does not fully comply with the requirements of the tender document.

7.11.15 Modification to programme

Approval of a programme does not mean that it cannot be changed. A good programme is flexible enough to permit modifications to meet the more probable risks. Experience shows that a programme which allows for contingencies enables those in charge of the work to see what the effect of adverse events will be on subsequent work and adjust their plans accordingly. The working programme should therefore be updated regularly. Revisions will also be required if the Engineer varies the work, if acceleration is required, or if extra time is given by the Engineer for any reason. The Contractor should then submit a modified programme for the Engineer’s approval.

7.12 CASH FLOW

This is effectively a financial programme of the works or the financial implication of the works for ERA. This Cash Flow Estimate serves two purposes. Firstly it indicates when and how much ERA will be required to pay to the Contractor and secondly it indicates the financial progress which the Contractor intends to make. If the Contractor were to be claiming lesser amounts than indicated in their cash flow estimate it would suggest that they were behind programme and conversely amounts greater than their cash flow estimate would indicate that they were ahead of programme. FIDIC Clause 14.3 requires that this be submitted.

The topic of Cash Flow is also addressed in sections 6.2.6 and 7.8.3.8.

7.13 APPENDICES

See below for Section 7 Appendices.

Appendix 7-1 - Guideline CA6 CAM Framework

GUIDELINE N° CA6

Ethiopian Roads Authority

Guideline N° CA6

Contract Administration Manual

Contract Administration Manual

November 2006

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
ETHIOPIAN ROADS AUTHORITY
CONTRACT ADMINISTRATION DIVISION

CONTRACT ADMINISTRATION MANUAL

November 2006

Contract Administration Manual

for

Project Description

(The project description should include the Name, Project Number and Constituent Link numbers.)

It is intended that this CAM should define the roles and responsibilities of the personnel involved in this project and the various management and control procedures to be followed in implementing this project all to ensure the satisfactory and timely conclusion of this project, as defined by the drawings and specifications.

It is not intended that this CAM should supersede any of the contract documentation but rather serve as a summary of them to facilitate easy reference to them and provide a single simple summary of details of how the Consultant and Contractor have agreed to manage the project.

1 Personnel

1.1 Definition, by name and position, of the principal Consultant's, Contractor's, Sub-Contractor's and Client's personnel including precise definitions of their roles, responsibilities and authorities.

1.2 An organogram providing a diagrammatic representation of (1.1) above.

2 Communications

2.1 Description of the methods and lines of communications to be employed on the contract, including details of the numbers and destination of any copies. (This should include letters, faxes, e-mails, minutes, site instructions, reports, documents, drawings, telephone calls etc.)

2.2 Detail all contacts for each of the principals (This should include postal addresses, telephone, cell phone and fax numbers, e-mail addresses etc.)

3 Work Programme

3.1 Description of the content and format of the work programme to be utilised

3.2 Descriptions and dates for the tasks on the critical path

3.3 Details of "approval" requirements

3.4 Details of when and under what conditions the programme should be revised/up dated.

4 Contract

4.1 Details of the procedures to be followed for the submission and evaluation of claims if and when they arise.

4.2 Contractual Checklist to confirm the dates of issue/ effecting

- Letter of Award
- Order to Commence
- Possession of Site
- Issue of Contract Documentation
- Issue of Construction Drawings
- Issue of Advance Payment Guarantee
- Issue of Performance Bond
- Issue of Insurances
- etc.

4.3 Summary of Contract Data

5 Finance

5.1 Definition of the format for payment requests and processing procedures therefore.

5.2 Definition of project financial control and monitoring procedures

5.3 Definition of the requirements for calculation of and backup data for Contract Price Adjustment, Materials on Site, Repayment of Advances, etc.

6 Construction Materials

The information detailed below serves to summarise and complement that contained in the contract document.

6.1 Definition of Approval procedures to be followed

6.2 Details of the type and frequency of testing required on each particular material or surface and should included details of tolerance limits.

6.3 Details of the requirements for the management of the results, including failures.

6.4 Description of the Laboratory operation, management and control procedures.

6.5 Details of Borrow pits, quarries etc. if defined at the project start up and if not details of requirements for the identification and proving of BPs.

6.6 Details of any equipment calibration procedures necessary.

7 Environment

7.1 Details of project requirements with regard to the environment.

7.2 Procedures to be followed for the exploitation, management and rehabilitation of borrow pits and quarries.

7.3 Details of environmental mitigation measures to be employed

7.4 Details of AIDS monitoring procedures and mitigation measures implemented on the project.

7.5 Details of Social monitoring procedures and implementation measures on the project.

8 Safety

8.1 Details of the requirements with regard to the safety of the personnel on site

8.2 Details of the requirements with regard to the accommodation of traffic

8.3 Details of maintenance requirements on the project

8.4 Details of procedures to be followed in the event of emergencies.

9 General

9.1 Details of anything else peculiar to the project

Appendix 7-2- Correspondence and Copies

FIDIC IV requires the various Parties to the contract to notify, advise and communicate with each other in the event of a number of circumstances occurring. It also requires these notices, advices and communications to be copies to the third Party on a number of occasions. The schedule below details which clauses require notifications, advices and communications and which of those are required to be copied.

Headings and Marginal Notes	Clause No.	From (✓)			To (✓) and Copied to (C)		
		Engineer	Contractor	Employer	Engineer	Contractor	Employer
Definitions	1.1(c)(i)	✓				✓	
Engineer and Engineer's Representative							
Engineer's Authority to Delegate	2.3	✓				✓	✓
Appointment of Assistants	2.4	✓				✓	
Contract Documents							
Custody and Supply of Drawings and Documents	6.1 p1	✓				✓	
	p2		✓		✓		
One Copy of Drawings to be Kept on Site	6.2		✓		✓		
Disruption of Progress	6.3		✓		✓		C
Delays and Cost of Delay of Drawings	6.49(b)	✓				✓	C
General Obligations							
Contractor's General Responsibilities	8.1 p2		✓		✓		C
Performance Security	10.1		✓		C		✓
Claims under Performance Security	10.3			✓		✓	
Not Foreseeable Physical Obstructions or Conditions	12.2 p1		✓		✓		C
	p2	✓				✓	C
Contractor's Superintendence	15.1	✓				✓	
Setting-out	17.1		✓		✓		C
Loss or Damage Due to Employer's Risks	20.3	✓				✓	C
Evidence and Terms of Insurances	25.1		✓		C		✓
Fossils	27.1		✓		✓		
	p2	✓				✓	C
Transport of Materials or Plant	30.3		✓		✓		C
Facilities for Other Contractors	31.2	✓				✓	
	(c)	✓				✓	C
Materials, Plant and Workmanship							
Engineer's Determination where Tests not Provided for	36.5(b)	✓				✓	C
Dates for Inspection And Testing	37.3	✓				✓	
Rejection	37.4	✓				✓	C
Independent Inspection	37.5	✓				✓	
Examination of Work before Covering up	38.1		✓		✓		
Uncovering and Making Openings	38.2	✓				✓	C
Default of Contractor in Compliance	39.2	✓				✓	C
Suspension							
Suspension of Work	40. 1	✓				✓	
Engineer's Determination following Suspension,	40.2	✓				✓	C
Suspension lasting more than 84 Days	40.3		✓		✓		
Commencement and Delays							
Commencement of Works	41.1	✓				✓	
Possession of Site and Access Thereto	42.1(b)			✓	✓		
	(d)		✓		✓		C
Extension of Time for Completion	44.1	✓				✓	C
Contractor to Provide Notification and Detailed Particulars	44.2(a)		✓		✓		C
	(b)		✓		✓		
Interim Determination of Extension	44.3	✓				✓	C
Rate of Progress	46.1	✓				✓	
Taking-Over Certificate	48.1		✓		✓		C
Clause No. - p1, p2 etc = paragraph 1, 2 etc.							

Note: Clause 60 below reflects the IDA modification of the FIDIC IV Clause 60.

Headings and Marginal Notes	Clause No.	From (✓)			To (✓) and Copied to (C)		
		Engineer	Contractor	Employer	Engineer	Contractor	Employer
Defects Liability							
Contractor's Failure to Carry Out Instructions	49.4	✓				✓	C
Contractor to Search	50.1	✓				✓	C
Alterations, Additions and Omissions							
Valuation of Variations	52.1	✓				✓	C
Power of Engineer to Fix Rates	52.2	✓				✓	C
	(b)	✓				✓	
Variations Exceeding 15 per cent	52.3	✓				✓	C
Daywork	52.4p1	✓				✓	
	p2		✓		✓		
	p3	✓				✓	
	p4		✓		✓		
Procedure for Claims							
Notice of Claims	53.1		✓		✓		C
Contemporary Records	53.2	✓				✓	
Substantiation of Claims	53.3		✓		✓		C
Payment of Claims	53.5	✓				✓	C
Measurement							
Work to be Measured	56.1	✓				✓	
	(b)		✓		✓		
Provisional Sums							
Definition of "Provisional Sum"	58.1	✓				✓	C
Certificates and Payment							
Certificates and Payment	60						
Monthly Payments	60.2	✓				✓	C
Statement at Completion	60.1		✓		✓		
		✓					✓
Discharge	60.12		✓		C		✓
Final Payment Certificate	60.13	✓				C	✓
Defects Liability Certificate	62.1	✓				C	✓
Remedies							
Default of Contractor	63.1p1			✓	C	✓	
	p2			✓	C	✓	
Urgent Remedial Work	64.1	✓				✓	C
Special Risks							
Damage to Works by Special Risks	65.3	✓				✓	C
Increased Costs arising from Special Risks	65.5	✓				✓	C
Outbreak of War	65.6			✓		✓	C
Payment if Contract Terminated	65.8	✓				✓	C
Settlement of Disputes							
Engineer's Decision	67.1 p1		✓1	✓2	✓1,2	✓2	✓1
	p3		✓	✓	C	✓	✓
Default of Employer							
Default of Employer	69.1		✓		C		✓
Contractor's Entitlement to Suspend Work	69.4		✓		C		✓
	(b)	✓				✓	c
Resumption of Work	69.5			✓	C	✓	
Changes in Cost and Legislation							
Subsequent Legislation	70.2	✓				✓	c
Clause No. - p1, p2 etc = paragraph 1, 2 etc.							

Appendix 7-3 - Contract Data

The data provided by the Contractor is more than likely to form the basis of evaluation for any claims submitted by the Contractor. It is therefore essential that comprehensive and accurate data be provided and maintained.

The Contractor should be required to provide, at least, the following data:

- Labour Returns - detailing, on a daily basis how may of each grade of employee were working and what they were working on. This return should also detail the number of males, females, expatriates and locals

- Plant Returns - detailing all of the plant and equipment on site, each item being identified by a unique reference. The time during which the plant was available to work, was working and or was broken down.

- Fuel Usage - detailing the fuel used by each item of plant

- Rainfall - details of the rain which fell on each day in relation to the rainfall record for that area.

- Any records of flooding and or natural events

Appendix 7-4 - Laboratory Administration Manual

No two projects are likely to have the same arrangements for laboratories. The laboratory(s) arrangement utilised for the site works could be anyone of the following:

- A commercial laboratory serving both the Contractor and Engineer
- Separate on site laboratories for each of the Contractor and the Engineer
- A single Contractor's laboratory utilised by the Engineer
- A single Engineer's laboratory utilised by the Contractor
- A joint laboratory operated by either the Contractor or the Engineer and utilised by both.

As each of these laboratory arrangements will have different operational methods and requirements it is not intended to provide Laboratory Administration Manual formats here.

However, whichever of the laboratory arrangements are utilised the information required will be the same and it is this aspect which must be addressed by the Laboratory Administration Manual and its procedures and which is discussed here.

In terms of the conditions of contract (see Appendix 3-5 FIDIC IV Clauses 8.1 and 36.1) the Contractor is responsible for constructing the works in accordance with the drawings and specifications and in doing so he is required to provide the facilities necessary for undertaking whatever tests the Engineer may require. The Engineer is further entitled (see Clauses 36 and 37) to do his own testing to satisfy himself of the Contractor's compliance with the drawings and specifications.

Therefore, in terms of the contract the Contractor is required to undertake all testing necessary to satisfy himself and (possibly) the Engineer that the works satisfy the specification and if the Engineer so wishes he is entitled to undertake his own testing and or supervise the testing of the Contractor and or require the Contractor to obtain his approval before covering up work. Therefore, whatever laboratory arrangement is decide upon for a site it must satisfy these requirements and provide:

- a verifiable record of the works as tested by the Contractor
- proof of compliance of the works with the specification
- the facility for the Engineer to undertake whatever testing he requires to satisfy himself of the compliance of the works with the specification

The laboratory manual should therefore include, but not necessarily be limited to, details of the following so as to ensure that all testing required is timeously undertaken in accordance with the specification:

- What testing is required to be undertaken
- What is required to be done with the results
- What the procedures are for the Supervision of testing by the Engineer
- What the procedure is for requesting approval of completed work
- What the procedure is for granting approval of completed work
- What the time frame is for requests and approvals
- Who manages the laboratory(s) and what their function, responsibility and authority is
- What the procedures are for testing which the Engineer requires to do
- What the procedure is in the event of test failures
- Any other items peculiar to the project

Appendix 7-5 - Environmental Management Manual

As stated in the body of the manual GoE legislation via the EPA, the contract specification and the conditions of contract will all place the requirement on the Contractor to respect and protect the environment in the course of constructing the works. In order to ensure that the Contractor is aware of this and complies with these requirements the Contractor must be required to prepare, present and implement and Environmental Management Plan for the project. This plan should include, but not necessarily be limited to, the following:

1. Details of how borrow pits are to be exploited and rehabilitated including

    - Identification of the areas required
    - Preservation of large trees
    - Negotiation and Payment of compensation / royalties
    - Removal and storage of top soil
    - Removal and storage of over burden
    - Excavation and operation of the pit (how it is to be developed)
    - Maintenance and operation of haul roads
    - Mitigation of dust and noise
    - Rehabilitation (including drainage) of the pit

2. Details of how quarries are to be exploited and rehabilitated including

    - Identification of the areas required
    - Negotiation and Payment of compensation / royalties
    - Removal and use of top soil
    - Removal and storage of over burden
    - Excavation and operation of the quarry (how it is to be developed)
    - Maintenance and operation of haul roads
    - Mitigation of dust and noise
    - Rehabilitation (including drainage) of the quarry
    - Explosive storage and management

3. Details of how the crusher is to be operated and the area rehabilitated

    - Identification of the areas required
    - Preservation of large trees
    - Negotiation and Payment of compensation / royalties
    - Removal and storage of top soil
    - Maintenance and operation of haul roads
    - Mitigation of dust and noise
    - Management and movement of product
    - Management and disposal of crusher waste
    - Management and disposal of operational waste (belts, rollers, steel, lubricants etc.)
    - Rehabilitation of the crusher yard

4. Details of how the workshop establishment is to be operated and rehabilitated

    - Identification of the areas required
    - Preservation of large trees
    - Negotiation and Payment of compensation / royalties
    - Removal and storage of top soil
    - Mitigation of dust and noise
    - Management and disposal of used and broken parts
    - Management and disposal of used oils, lubricants, batteries, hydraulic pipes and fittings, tyres, tubes etc.
    - Rehabilitation of the workshop yard

5. Details of how the office and housing establishments are to be operated and rehabilitated

- Identification of the areas required
- Preservation of large trees
- Negotiation and Payment of compensation / royalties
- Removal and storage of top soil
- Mitigation of dust and noise
- Water supply
- Waste water disposal
- Sewage disposal
- Rubbish management and disposal
- Rehabilitation of the areas

6. Details of the how the site is to be operated and rehabilitated

- Site clearance
- Removal, storage and use of top soil
- Cut to spoil
- Preservation of large trees
- Cut and fill slopes
- Deviations including operation and rehabilitation
- Mitigation of dust and noise

7. Details of how all Social Issues are to be addressed

- Recruitment of workers (including. gender proportions and preferences)
- Employment conditions
- Disciplinary procedures
- Employee accommodation(incldg. water supply and effluent and refuse disposal)
- Local liaison committee
- Expropriation and compensation procedures

8. HIV/AIDS - Although this could form part of this EMP it has been addressed separately in Appendix 7-6 - HIV/AIDS Campaign Format.

9. Safety - Although this could form part of this EMP it has been addressed separately in Appendix 7-7 - Safety Plan.

FURTHER GUIDANCE ON THE ENVIRONMENT CAN BE FOUND IN THE ENVIRONMENTAL MANUAL PREPARED UNDER THE SAME ASSIGNMENT AS THIS MANUAL

Appendix 7-6 - HIV/AIDS Campaign Format

Construction projects and the personnel associated with them have been identified as a serious propagator of HIV/AIDS, especially in rural areas and areas of previously low exposure. It is for this reason that today it is a requirement of most funding agencies and national governments that construction projects include an element of HIV/AIDS awareness and prevention.

In general contracts should therefore make provision for the implementation of HIV/AIDS awareness and prevention campaigns in parallel with the construction works and will be paid for via the bills of quantities in the same way as the construction works. In this respect it is essential that the PE make it clear to the Engineer that his responsibility, with regard to supervision, is the same for the HIV/AIDS awareness and prevention campaigns as it is with the construction works.

Because the Contractor will usually not be qualified to implement such HIV/AIDS awareness and prevention campaigns it is normal for them to appoint, as a sub-contractor a Service Provider for these campaigns. Notwithstanding who implements these campaigns they should include, but not necessarily be limited to the following broad based activities targeting both individuals and groups:

- Information posters in public places both on and off site (eating places, bars, guest houses, etc).
- Making available, for free, socially marketed condoms.
- Peer educators (reference people) drawn from the local labour and trained in HIV/AIDS issues for discussions with colleagues (estimate 1 per 30 employees).
- Small focus group discussions and information covering key issues.
- Theatre groups and video presentations.
- Promotional events (such as football matches) to encourage openness and discussion of HIV/AIDS issues.
- Promotional billboards to raise awareness of the integration of road construction and HIV/AIDS activities.
- Inclusion of HIV/AIDS activities at site meetings, other discussions, and with the Project Liaison Committee.
- Availability of promotional materials such as T-shirts, caps, bumper stickers, etc.
- STDs diagnosis and treatment
- Voluntary Counselling and Testing (VCT)
- Psychosocial support and health care (including prevention and treatment of opportunistic infections) for workers infected and affected, as well as their families.

The scope of activities may be tailored as required to meet the perceived needs and priorities of the labourers, determined by participatory approaches, to ensure they are appropriate, desired and have a public health impact. The scale and frequency of activities may also be adjusted to suit requirements of the target group where education should cover:

- Stigma and discrimination issues
- preventative behaviours including partner reduction, condom use, and awareness and importance of treatment of STDs;
- skills including negotiating safer sex, correct condom use, purchase without embarrassment;
- referral to local health centres and available services

The tasks required to support the above activities should include, but not necessarily be limited to:

- Establishing the status and focus of all current and planned HIV/AIDS activities in the area to avoid overlaps and determine potential involvement.
- Providing education and training for site personnel, supervisors and peer educators.
- Providing supervision for peer educators to ensure sustained quality of education.
- Providing mechanisms for the social marketing of condoms and distribution of materials.
- Integrating into the health care services routinely provided to workers the “medical” issues related to HIV/AIDS-STDs and other as appropriate.

The Approved Service Provider must co-ordinate with district and local health and HIV/AIDS services and offices and representatives of local health authorities should be invited to attend training and communication activities.

Activities on the Site should be linked as far as possible with on going HIV/AIDS activities in the area. This will ensure complimentary approaches and minimise duplication. In addition, these links will ensure the target group will have access to continued information after the end of the construction period.

The Approved Service Provider shall work in close liaison with the ERA Environmental Monitoring and Safety branch for monitoring and evaluation of activities, feedback into other construction activities, and national level policy development for HIV/AIDS activities for road construction activities.

In the same way as the Engineer is required to supervise the implementation of the HIV/AIDS awareness and prevention campaigns, the Contractor is required to either implement or accept responsibility for the sub-contractor implementing the campaigns. The Contractor (specifically the Human Resources section) and the Approved Service Provider shall work closely together to support the HIV/AIDS programme activities. This shall ensure maximum effectiveness and integration with construction activities. The Contractor shall:

- Schedule appropriate timing and duration for the implementation of HIV/AIDS activities as part of the work plan of the Workforce and the Key Personnel. Designated rest times such as lunch breaks and paydays should be excluded.
- Identify suitable individuals for education from recruitment records with the implementing organisation.
- Provide suitable sites for communication activities and for condom distribution as well as “clinical” issues.
- Monitor of the implementation of peer educator activities.
- Provide support as necessary to the Approved Service Provider.

FURTHER GUIDANCE ON SOCIAL ISSUES CAN BE FOUND IN THE ENVIRONMENTAL MANUAL PREPARED UNDER THE SAME ASSIGNMENT AS THIS MANUAL

Appendix 7-7 - Safety Plan

As stated in the body of the manual GoE legislation, the contract specification and the conditions of contract all require the Contractor to maintain the site safe and to employ working methods and procedures which will ensure the safety of its workers and the public. In order to ensure that the Contractor is aware of this and complies with these requirements the Contractor must be required to prepare, present and implement Safety Plan for the project. This plan should include, but not necessarily be limited to, the following:

1. The appointment of a suitably qualified Accident Prevention Officer on the site, whose responsibilities shall include:

    - Training of employees in road safety
    - Training of employees in safety at their place of work
    - Ensuring that all employees wear the required protective clothing in accordance with the tasks they are assigned
    - Ensuring that all employees working on or near the road wear reflective clothing
    - Ensuring that adequate warnings, signage, speed control mechanisms, flagmen etc. are provided for the safe accommodation of traffic.

    The Officer shall be fluent in the language of the contract as well as the predominant language of the project area.

2. The establishment of an on site clinic/ first aid facility

    - Procedures for its operation
    - Procedures for its use

3. The establishment of a set of procedures detailing who is to do what in the event of an injury or accident. This should include details of:

    - 24 hour contacts for all responsible persons (Contractor, Engineer and ERA)
    - 24 hour contacts for local and district medical facilities
    - 24 hour contacts for evacuation facilities
    - 24 hour contacts for local police and authorities
    - Definition of drivers and vehicles available for use
    - Insurance reporting requirements and contacts
    - Emergency lighting facilities

4. The definition of a traffic management plan to cover the following:

    - Warning signs, signage, speed control mechanisms, flagmen, light etc
    - How single lane traffic will be accommodated and managed
    - How deviations will be managed
    - Road closures

5. The maintenance of security of the personnel and equipment involved in the project.

    - Guards
    - Security Measures
    - Security clearance
    - Insurance and its requirements
    - The Police
    - Evacuation

Appendix 7-8 - Engineer's Specific Rights and Obligations

Engineer's Specific Rights and Obligations (FIDIC IV)

Rights	Sub-Clause
To exercise the authority to be implied from the Contract	2.1
To delegate powers to the Engineer's Representative	2.3
To issue instructions to the Contractor as necessary	Various
To request a revised programme	14.2
To withdraw approval of the Contractor's representative if necessary	15.1
To require replacement of any member of the Contractor's staff if necessary	16.2
To instruct tests on materials	36.1
To instruct a suspension of the Works	40.1
To notify the Contractor to expedite progress	46.1
To make variations he considers appropriate	51.1
To value claims in the absence of details from the Contractor	53.4
To correct or modify Interim Payment Certificates	60.4
To certify if the Contractor is in default	63.1

Obligations	Sub-Clause
To obtain the Employer's specific approval when required	2.1
To appoint the Engineer's Representative	2.2
To determine additional costs and/or extensions of time when appropriate	Various
To issue the Taking-Over Certificate or instruct the contractor to complete outstanding works	48.1
To make variations he considers necessary	51.1
To value variations	52.1
To determine the value of the Works by measurement	56.1
To prepare Interim Payment Certificates	60.2
To issue the Defects Liability Certificate	62.1
To give an Engineer's Decision within 84 days	67.1

OBLIGATIONS AND DUTIES OF THE ENGINEER

1. INTRODUCTION

The Engineer's role is pivotal on a civil engineering project. He is the link between the Employer on the one hand and the Contractor on the other. His duties include the supervision of the Works as an observer to ensure that the project is constructed to the required specification and he should keep the Employer totally informed as to progress and the financial viability as the Works are completed. Of course he may have been appointed during the pre-contract period to initially design the Works but this note concentrates on his role and duties during the 'post-contract' period. This is usually where difficulties arise leading to 'claims' for additional money from the Contractor. His role during the 'pre-contract' period is important – after all a 'faulty' design could lead to claims as well.

2. THE APPOINTMENT OF THE ENGINEER

It must be emphasised that the Engineer is a professional and as such, the Employer can rely on him to produce the following:

- Skilful design (within defined limitations as to the purpose of the project).
- He can be relied upon to obtain a competitive price on terms which protect the Employer's interests with regards to price and quality.
- He should provide effective supervision.
- He should provide efficient administration.

The question to ask is what level of care should the Engineer (as a professional) exhibit and how much the Employer can rely on this. If a person declares himself as a professional (i.e. possessing some special skill or competence), then "it is sufficient if he exercises the ordinary skill of the ordinary competent man exercising that particular art"

However, the situation with Engineers is slightly different. If an Engineer declares a particular skill within the industry (say Geotechnics, Bridge Design, Roads Design etc.) and then commits a 'breach' of his duty to the Employer, he is not judged on the average skills within his profession. The Employer will have relied upon his specifically declared skills, which is, after all, why the Employer commissioned the Engineer in the first place.

The Engineer not only owes a duty of care to the Employer but also owes a duty to:

- the Contractor, as the body dealing with the construction
- third parties (those closely affected by the construction activities)
- society in general
- his employees and, of course
- himself (in the sense of his own employees)

The above can be viewed as the legal perspective which would not alter to any degree under differing systems of law. There is a 'duty of care' under codified systems (such as in Ethiopia) and the 'common law' system as in the UK.

3. DUTIES IN DETAIL

a. Design

During the pre-contract period, a Consulting Engineer, under a separate agreement on most ERA projects, will have been commissioned by the Employer to undertake design work for the anticipated project. It is hoped that the Employer will have defined the purpose and scope of the works. The design will include specifications, plans, drawings, choice and quality of materials and possibly, some working methods. The Employer can have an input, but it would be the duty of the Engineer, if he disagrees, to advise the Employer if he considered that there was the possibility of a failure when the Works are commenced.

Should the Engineer fail to achieve the requisite level of care expected would depend on a question of facts and when the 'breach' of the agreement occurred. If early, then the Engineer should be allowed to rectify the faults. If the breach was sufficiently serious then the Employer could repudiate the contract, reassign a new Engineer, and claim damages - the level of which would be determined in relation to the circumstances.

b. Examination of the Site

This is important for a number of reasons and will be examined further in "Contractors Obligations". For the purposes of this section however, whilst the Employer and Engineer are under no obligation to provide details of the site to the Contractor, this policy should be considered unwise. It is important that the Engineer should establish boundaries, ground conditions, access, existing structures and trees/vegetation. It would also be important to visit the site to undertake comprehensive surveys and produce reports on ground conditions. Failure to include such information within the contract documents could lead to a contractor making 'claims' at a later date. The Contractor, however, is under an obligation (FIDIC Clause 11) to visit the site during the tender period, but because of limited time he is usually restricted to visual examination. He would have to include, within his tender, a price element for 'risk' which could inflate the costs for the Employer. Therefore, if the Employer commissions a full site examination at his cost, it should increase the level of certainty when tenders are submitted by the numerous contractors.

c. Delivery of Drawings, Information and Instructions in time

It is a contractual obligation that the Engineer shall supply drawings, information and instructions within a reasonable time. It is a matter of considerable debate as to what is reasonable. It is normal practice for the Engineer to provide outline drawings at tender stage, followed by more detailed drawings as the Works progresses. These have to be supplied in such a time that they conform with the Contractor's programmed intentions, so that he has time to plan in detail and order plant, labour and materials in such a fashion that he can work efficiently (i.e. profitably).

Such responsibilities are outlined in FIDIC Clause 7.1 as:

"The Engineer shall have authority to issue to the Contractor, from time to time, such supplementary Drawings and instructions as shall be necessary for the purpose of the proper and adequate execution and completion of the Works and the remedying of any defects therein. The Contractor shall carry out and be bound by the same."

A contractor could, however, structure his programme to incite these sorts of delays. The Engineer, therefore, should assess the programme and check progress against intentions - if slow, assess why. It could be the Contractor's own problems or unrealistic programme or delays occasioned through other factors i.e. unforeseen ground conditions (Clause 12.2), variations (Clause 51) etc.

d. Instruction as to Methods of Working and Temporary Works

It is not within the Engineers general remit to instruct the Contractor how to undertake his work. The Engineer must be very careful in this respect. He can assist to overcome problems (and this can be beneficial to site relations) but the final responsibility lies at the Contractor's door.

However, should the Engineer consider that the Contractor's method of working is unsafe, or will lead to a failure of intention; he should balance the interests of the Employer and possibly intervene e.g.

- Where Contractor's methods contravene the specification (clearly here, this would be a breach of the contract by the Contractor).
- Where Contractor's methods would imperil the final outcome of the Works (a possible future breach).
- Safety - this could lead to accidents to adjoining or related property.

e. Nominated Sub-Contractors (Clause 59)

In some situations, it is necessary to utilise the services of a specialist contractor. There can be a variety of reasons for this namely, specialist equipment with design capabilities with a lengthy 'run-in' time to installation. One example could be specialist piling works which need to be investigated, planned and executed prior to the Contractor undertaking his work.

If the Engineer intends to utilise such services the Contractor should be given adequate advance notice so that he can incorporate any special requirements into his programme. Contractually, the Contractor does have a right to refuse nomination (Clause 59.2) and he should be given the opportunity to either re-approve, recommend another or undertake the work himself (which is the ideal situation, for various reasons, but especially for control of the activities).

f. Knowledge of Legislation, Regulations, By-laws and Rights of Adjoining Owners

It is probably obvious to state that an Engineer should have intimate knowledge of all legal aspects regarding his overall design criteria. His design may well be sound but could lead to the exposure of the Employer if consideration were not given to the legal requirements of undertaking an engineering project. Failure on the Engineer's part to heed such notice could either lead to him becoming liable in a negligence claim or a claim from the Contractor against the Employer.

g. Excess costs over estimates

It is quite possible that an Employer will impose a budget limit for a project and the Engineer, when undertaking a feasibility study, could be viewed as negligent if he indicated an estimate which was greatly exceeded when tenders were returned. The Employer, however, is not bound to enter legal relations with any of the tendering contractors and may, in such a situation, ask the Engineer to investigate possible cost savings by reviewing his design.

h. Preparation of Quantities

Should the Engineer prepare the Bills of Quantities it could be viewed that the responsibility is identical to that of a Quantity Surveyor. Generally, contracts are remeasurable and the view taken by Quantity Surveyors in the past has been that (in the case of an error in the Bills of Quantities) had the documents been correct in the first place then the Tenders would have reflected this so the Employer is not making an unreasonable loss. Nevertheless, the Engineer still has a duty to act for the Employer in a professional manner and the Employer can rely on his declared expertise.

i. Recommending Contractors

An Engineer cannot guarantee either the solvency or competency of a Contractor. He should, however, make all reasonable enquiries as to a Contractor's financial status and it would even be wise to view a Contractor's previous project (or secure recommendations) to assess his capabilities.

j. Recommending Form of Contract

The FIDIC form of contract is used on most overseas projects. It must be stressed that no standard form of contract can be viewed as perfect and it may become necessary for the Engineer to amend certain of the clauses to suit either circumstances or the law prevailing in the country that the project is being undertaken.

The Engineer should carefully consider any amendment he may wish to recommend as it can have adverse affects on other parts of the documents and create ambiguities which the Contractor may claim that he has incurred additional costs (Clause 5.2 FIDIC).

k. Supervision

The three main areas of supervision can be catalogued as follows:

- The prevention, detection and correction of defective works.
- To decide whether to intervene, or not intervene to secure the Employer's best interests.
- The detection of and prevention of failure of the permanent design.

The Engineer can, by site visits determine the above but he will usually appoint a representative to undertake these duties. Clause 2 outlines the procedures of the Engineer's Duties and Authority and can be amended by the Employer to suit. The Engineer can, under Clause 2.2 appoint a Representative with specified duties, notified in writing. Further assistants can be appointed pursuant to Clause 2.4. It must be noted (Clause 2.5) that if the Engineer writes to give instructions they shall be in writing, or if given orally, confirmed in writing. If the Contractor accepts a verbal instruction then he can confirm (in writing) the same within 7 days and then the instruction automatically becomes an Engineer's instruction. In all his actions, the Engineer must act impartially (Clause 2.6).

l. Administration of the Contract

This section is indicative of the Duty of Care owed by the Engineer to the Employer. Besides the necessary issue of drawings and instructions 'inter alia' (mentioned previously), the Engineer's duties in relation to the administration of the Contract are varied and the major areas are catalogued below:

Clause	Description	Explanation
4.1	Subcontracting	To consent in writing to allow the Contractor to S/Contract part of the Works.
7.2	Permanent Works Designed by Contractor	To approve Contractor produced drawings etc.
14	Programme	To receive from the Contractor his programme, assign his assent; request revised programmes where necessary. Receive a cash-flow summary and revisions where necessary.
15.1	Contractor's Superintendence	Examine credentials and approve contractors appointed superintendent. Power to revoke.

Clause	Description	Explanation
16.2	Engineer at Liberty to Object	Engineer can object to any of the Contractor's staff and have them removed from site.
25.1	Evidence and Terms of Insurances	The Engineer to be notified when Contractor provides evidence of insurance policies to the Employer.
27.1	Fossils	Give instructions upon the discovery of fossils.
30.3, 4	Transport of Materials or Plant/Waterborne Traffic	The Engineer to be made aware of damage to roads/bridges and assess what liability the Employer will incur and contra-charge the Contractor.
31	Opportunities/Facilities for other Contractors	To require the Contractor to give other contractors etc. opportunities to work etc.
33.1	Clearance of Site on Completion	To monitor the site on completion
35.1	Returns of Labour and Contractor's Equipment	The Engineer may request the Contractor for such records.
36/37	Materials, Plant and Workmanship/Inspection and Testing	The Engineer shall instruct the Contractor to test materials, plant and workmanship, consult with Employer and Contractor to determine where costs lie and any Extensions of Time (if necessary).
38	Examination of Work before Covering-up /Uncovering and Making Openings.	To instruct opening up of Works for examination. Determine where costs lie.
39.1	Removal of Improper Work, Materials and Plant	The Engineer exercises authority to order the removal of improper work etc. and he adjudges what costs can be deducted from the Contractors.
40	Suspension of Work	Instruct the Contractor to suspend the Works and consult with the Contractor/Employer to determine Costs and/or Extensions of Time.
41	Commencement of Works	Notify the Contractor to commence the Works in line with document requirements.
42	Possession of Site and Access Thereto	Receive notice from Contractor to take possession/access. If Employer fails to give possession/access then to consult and determine costs and extensions of time.
44	Extension of Time for Completion	Engineer to consult and notify Employer/Contractor regarding circumstances of EOT, following notification from Contractor. Award (if Contractor entitled) interim EOT. Note: there shall be no decrease of any previously awarded EOT.
45.1	Restriction on Working Hours	Engineer to give consent to work nights/rest days if necessary.

Clause	Description	Explanation
46.1	Rate of Progress	Important! Engineer to monitor progress and if slow then to instruct Contractor to take steps to remedy. Consult with Employer to determine additional supervisory costs and contra-change Contractor.
48	Taking Over Certificate/ Sectional Completion/Substantial Completion of Parts.	Engineer to follow procedure and issue certificates.
49	Completion of Outstanding Works and Remedying Defects.	Instruct the Contractor to complete outstanding, defective work. If Contractor fails, then to assess cost and contra-change.
50.1	Contractor to Search	Consult with Employer/Contractor to determine costs to be added to Contract Price for 'searches'.
51	Variations	Engineer can order variations to the Works.
52	Valuation of Variations, Fix Rates, Dayworks	Outlines the procedures of dealing with additional work.
53	Notice of Claims, Records, Failure to Comply and Payment of Claims.	To receive notices, order (if necessary) to keep records, assess the claim if the Contractor fails to keep adequate records and consult with Employer/Contractor as to the level of recommendation of payment.
56	Works to be Measured	Follow the procedure laid out in this clause. The Engineer is to inform the Contractor when measurement is to be undertaken.
58	Provisional Sums	The Engineer has authority to instruct the Contractor to undertake work.
59	Nominated Sub-contractors	The Engineer can select N.S. and instruct the Contractor to pay them for work undertaken.
60	Certificates and Payment	The Engineer is to secure monthly statements from the Contractor, issue certificate to Employer. Release retention monies. On completion, to secure from Contractor a Final Statement and issue a Final Payment Certificate. The Engineer has the right to correct any previously issued certificate.
62	Defects Liability Certificate	To sign and give to the Employer a Certificate
63	Default of Contractor	Engineer to certify to Employer that Contractor has 'breached' his obligations in some way.
64	Urgent Remedial Work	Engineer to advise Employer of the necessity of undertaking urgent remedial work, ascertain the cost and if appropriate to contra-change.

Clause	Description	Explanation
65.3	Damage to Works by Special Risks	To determine additional costs due to 'Special Risk' and add it to the Contract Price and pay Contractor if works terminated.
67.1	Engineer's Decision	The Engineer to adjudicate in relation to being requested to take a decision by others, either the Contractor or Employer in the case of a dispute.
67.3	Arbitration	In the case of Arbitration the Engineer is not disqualified from being called as a witness.
68	Notices	Stipulates the procedure for giving notices amongst the 'parties'.
69	Default of Employer	Receive copy of notice from the Contractor to Employer stating reason for terminating the Contract.
69.4	Contractor's Suspending of the Works	Consult the Employer and Contractor to determine costs and E.O.T. following failure of Employer to pay the Contractor.
70.2	Subsequent Legislation	Consult the Employer and Contractor to determine any additional costs that should be added to the Contract Price.

m. Comprehensive Design

Obviously, the Engineer would fail in his duty to the Employer if he does not provide for work which is necessary for a satisfactory final result (i.e. defective design). There is some doubt as to the final level of damages that the Engineer may incur. Case law in the UK indicates that the Professional Engineer (if the breach were so serious) would not be entitled to recover his fees.

4. QUASI-JUDICIAL DUTIES

It has been generally understood that the Engineer must undertake his duties with discretion and fairness to the Contractor. He owes, therefore, a duty of care to both the Employer and the Contractor.

The Engineer, in undertaking his duties, should only decide on matters of value, quality of work or extensions of time, in consultation with both the Employer and the Contractor. This is also applicable to a 'formulated' dispute. Clause 2.6 specifically requires the Engineer to 'exercise his discretion and act impartially'. Both the Contractor and Employer must adhere to those instructions and further the Works. It is only under Clause 67 (Settlement of Disputes) that the parties can lodge their disagreements, pursue the topic further and follow procedures contained therein.

Clause 67 (Settlement of Disputes) has a wide impact. It requires that the parties should resolve their disputes 'amicably' prior to entering costly Arbitration procedures.

5. NEGLIGENCE IN CERTIFYING

The Engineer does not have a contractual agreement with the Contractor. He does, however, owe the Contractor a 'Duty of Care', but it is not until a dispute reaches the Arbitration stage that an Engineer's certificate of payment can be challenged.

Appendix 7-9 - Initial Site Meeting Agenda

Initial Site Meeting Agenda

1. Opening
   Introduction
   General description of Contract scope
   Project philosophy

2. Organisation
   Engineer's organisation and personnel for the Contract
   Contractor's organisation and personnel for the Contract

3. Communication
   Verbal
   Site Memos/Instructions
   Correspondence and drawing transmittals
   Schedule for meetings

4. Program
   Overall work plan and program
   Manpower
   Co-ordination with other contractors and their work programs

5. Construction Materials
   Planning for material supplies
   Transport and offloading procedures
   Storage and stockpiling procedures

6. Employer furnished facilities
   Survey marks
   Construction power (if applicable) and contractor's extensions
   Water and sewerage (if applicable)
   Telecommunications (if applicable)
   Other services - borrow areas, quarries, disposal and stockpile areas

7. Contractor's facilities
   Accommodation or camp facilities
   Construction power (if applicable)
   Water and sewerage (if applicable)
   Sewage and waste disposal
   Telecommunications (if applicable)
   Operation in borrow areas, quarries, disposal and stockpile areas

8. Contractor's plant and equipment planning

9. Contractor's storage areas
   Location and layout
   Buildings
   Conditions or restrictions on use
   Requirements of other contractors (if applicable)

10. Work rules
    Work hours
    Work outside agreed hours
    Security
    Camp regulations

11. Safety
    Safety provisions and procedures
    First-aid and medical provisions
    Accident reporting

12. Quality control program
    Inspection of the work
    Testing

13. Design Issues
    Site Investigations
    Pile Load Testing
    Design Changes

13. Measurement of the work

14. Monthly progress statement procedure
    Agreement of monthly progress measurements
    Form of submittal
    Payment for variations
    Deductions for retention, etc

15. Issue of variation orders

16. Claims or other dispute handling

17. Reporting requirements (as applicable)

18. Drawing and data submittal and review procedure

19. Contractor's appointment of subcontractors

20. Insurance

21. Environment
    Requirements & Reporting
    Environmental Management Plan
    HIV/AIDS Awareness and Prevention Campaigns
    Social Monitoring
    Local Liaison Committee
    Right of Way

22. Other Matters

Appendix 7-10 - Engineer's Filing System

A considerable amount of paperwork is generated on Site during the course of a construction project. This includes general correspondence, instructions, drawings and information on construction details, the results of materials testing, measurement and payment records, details of claims, minutes of meetings and reports. To effectively manage and maintain a record of all Site communications it is essential that a filing system is adopted to suit the particular circumstances and size of the project. If practicable, the filing system should reflect that used by the head office. It is suggested that the following system is a minimal requirement:

1. Chronological Master Correspondence Files
   - 1.01 General
   - 1.02 Incoming Correspondence
   - 1.03 Incoming Correspondence Register
   - 1.04 Outgoing Correspondence
   - 1.05 Outgoing Correspondence Register
   - 1.06 Receipt Book (for issuing correspondence to the Contractor)

2. Contract Administration
   - 2.01 General
   - 2.10 Contract Documents
   - 2.20 Correspondence with the Engineer
   - 2.30 Correspondence with the Employer
   - 2.40 Correspondence with Other Parties
   - 2.50 The Engineer's Establishment
   - 2.60 The Contractor's Establishment
   - 2.70 Copies of Standard Forms

3. Sub-Contractors
   - 3.01 General
   - 3.02 Files for Individual Sub-Contractors

4. Design
   - 4.01 General
   - 4.10 Record of All Setting out Information Supplied
   - 4.20 Record of All Design Drawings and Documents Issued to Contractor
   - 4.30 Design Calculations
   - 4.40 Contractor's Temporary Works Proposals

5. Drawings
   - 5.01 General
   - 5.10 Drawing Register
   - 5.20 Contract Drawings
   - 5.30 Working Drawings
   - 5.40 As Built Drawings
   - 5.50 Superseded Drawings

6. Notices, Instructions and Variation Orders
   - 6.01 General
   - 6.02 Register of Site Instructions
   - 6.03 Register of Variation Orders
   - 6.04 Register of Daywork Orders
   - 6.05 Register of Provisional Sum Order
   - 6.10 Site Instructions
   - 6.20 Variation Orders
   - 6.30 Daywork Orders
   - 6.40 Provisional Sum Orders
   - 6.60 Contractors Request for Further Information, Drawings or Instructions
   - 6.70 Requests for Approval

7. Construction
   - 7.01 General
   - 7.10 Traffic Diversions
   - 7.20 Maintenance of Existing Road
   - 7.30 Record of Survey and Setting out Data
   - 7.40 Contractor's Method Statements
   - 7.50 Construction Activities (use major works items from BQ)
   - 7.60 Materials on Site
   - 7.70 Contractor's Daily Equipment and Labour Returns
   - 7.71 Daywork Returns
   - 7.80 Daily Reports from Resident Site Staff
   - 7.90 Utilities and Other Contractors

8. Materials, Laboratory and Testing
   - 8.01 General
   - 8.10 Site Investigations
   - 8.20 Contractor's Mix Designs
   - 8.30 Daily Reports and Summaries of Test Results
   - 8.40 Detailed Laboratory Testing Records
   - 8.50 Detailed Field Testing records
   - 8.60 Suppliers Control Testing
   - 8.70 Requests for Testing and Samples Register

9. Works Programmes, Reporting and Meetings
   - 9.01 General
   - 9.10 Works Programmes and Cash Flow Forecasts
   - 9.20 Monthly Progress Reports
   - 9.30 Progress Photographs
   - 9.40 Meetings, Agenda and Minutes

10. Measurement and Finance
    - 10.01 General
    - 10.10 Detailed Records of Measurement
    - 10.20 Contractor's Monthly Statements
    - 10.21 Payment Certificates

11. Claims and Disputes
    - 11.01 General
    - 11.10 Claim No. 1 - Title
    - 11.11 Claim No. 2 - Title, etc.
    - 11.20 Engineer's Decision

12. Manuals
    - 12.01 Contract Administration Manual
    - 12.02 Laboratory Administration Manual
    - 12.03 Environmental Management Manual
    - 12.04 HIV/AIDS Awareness and Prevention Campaigns
    - 12.05 Safety Plan

Appendix 7-11 - Contractor's Specific Rights and Obligations

Contractor's Specific Rights and Obligations (FIDIC IV)

Rights	Sub-Clause
To be notified of the appointment of the Engineer's Representative and assistants	2.3
To be consulted by the Engineer on determinations of additional costs and/or extensions of time	Various
To seek consent for work at night or on rest days	46.1
To give notice of substantial completion	48.1
To be paid the value of the Works determined by measurement	56.1
To receive payments within 28 days of receipt of Interim Payment Certificates	60.1
To proceed to arbitration if dissatisfied with an Engineer's decision	67.1
To determine employment under the Contract in the event of default by the Employer	69.1

Obligations	Sub-Clause
To seek the Employer's prior consent to assignment of the Contract	3.1
To execute the Works with due diligence, remedy defects, and provide all things required	8.1
To take full responsibility for operations and methods	8.2
To execute and complete the Works in accordance with the Contract and comply with the Engineer's instructions	13.1
To accept instructions only from the Engineer	13.1
To submit a programme and (if required) method statement	14.1
To submit a revised programme if required	14.2
To provide full-time superintendence and representative, and replace the representative if required by the Engineer	15.1
To replace any person when required by the Engineer	16.2
To take out necessary insurances	21,23,24
To comply with statutes etc. and indemnify the Employer against penalties	26.1
To keep the Site clear	32.1
To suspend the Works if instructed	40.1
To expedite progress if required by the Engineer	46.1
To submit detailed particulars of claims	53.3
To submit monthly statements of amounts due	60.1
To attempt to reach amicable settlement prior to arbitration	67.2

OBLIGATIONS AND DUTIES OF THE CONTRACTOR

FIDIC Clause 8.1 States:

'The Contractor shall, with due care and diligence, design (to the extent provided for by the Contract), execute and complete the Works and remedy any defects therein in accordance with the provisions of the Contract. The Contractor shall provide all superintendence, labour, materials, Plant, Contractor's Equipment and all other things, whether of a temporary or permanent nature, required in and for such design, execution, completion and remedying of any defects, so far as the necessity for providing the same is specified in or is reasonably to be inferred from the Contract'.

The above outlines the fundamental and overall obligation of the contractor to execute the Works and remedy any defects prior to the expiration of the Defects Liability Period.

1. OBLIGATION TO COMPLETE

The aforementioned Clause 8.1 indicates a dual obligation for the Contractor to carry out and complete the Works described within the several documents comprising the contractual agreement. As long as the Works are clearly defined with sufficient precision the Contractor cannot abandon the Works, however close he might be to completion.

There are, of course, circumstances which may release the Contractor from his obligations. They are demonstrated under Clause 20.4 (Employer's Risks) whereby the Employer will secure insurances to protect his interests. The Contractor's remedies are contained within Clauses 65 & 66, whereby he may receive payment for works completed up to the point of termination of the Contract. Likewise, under Clause 69, there are circumstances whereby if the Employer defaults the Contractor must notify that he is terminating the contract. A less severe measure is for the Contractor to 'suspend' the works (Clause 69.4) until such time as the 'fault' has been remedied or even slow his rate of progress down. It is important to note that the situations giving rise to such actions are contained in Clause 69.1 i.e.

- failure to pay the amount certified pursuant to Clause 60.1
- refusing or interfering with the issue of such a certificate
- act of bankruptcy or liquidation
- economic dislocation[*]

It must be noted that the Contractor will not be entitled to terminate/ suspend the Works in the cases of disputes which he feels he is entitled to receive additional payments for. It is the failure to pay agreed and certified money which will trigger action under this Clause of the Contract.

Contracts and Substantial Performance

1. Completion of the Contract

The formation of an engineering contract is no different than a more conventional one. The whole basis is that it is a promise by a Contractor to complete the Works and supply such materials, in consideration for a promise by the Employer to pay. In most contracts (as FIDIC), payments are on an interim basis in instalments, very often with an 'up-front' advance payment, repaid at stipulated periods throughout the contract period. In a simple contract, such as a sale of goods, full payment should be upon receipt of the article. If the goods prove defective in any way or a part missing, then

[*] Economic dislocation can be viewed as a circumstance totally outside the control of either party. Examples could be global banking collapses (as in the Great Depression of the 1920's 1930's), raging inflation, and extraordinary currency exchange differences.

the contract is not 'whole' and payment may not have to take place. In engineering contracts the situation is slightly different because of a 'rule' developed in the common law countries known as the 'doctrine of substantial completion'. The Contractor would get paid, in the case of partial completion, for what he has done. The Employer would, however, in the case of a default by the Contractor, be able to recover damages or employ another contractor to complete the works and recover any costs.

2. Substantial Performance

To reiterate, the doctrine of substantial completion, in the context of construction contracts came about to alleviate the possibility of the Employer, who on discovering minor defects, hiding behind the law and withholding full payment. The doctrine was developed because it was felt that this situation was 'unconscionable'. The law is less favourable to contractors who abandon the Works (for whatever reasons) when the Works are substantially less than complete or the situation is not of benefit to the Employer.

3. Express Terms for Payment by Instalments

It is normal on large contracts for there to be express terms contained within the documents to make payments (FIDIC Clause 60) by instalments. There is some precedent in UK law to indicate that contractors, who reach substantial completion with minor work outstanding or minor defective work can give credits to the Employer. This situation, if agreed by the Employer, obviously resolves possible disputes and ultimately obviates the need to resort to the expensive processes of litigation. There is always a recovery method through retention monies (clause 60.3). Strictly speaking the Contractor should fulfil his obligations to complete the Works and remedy defects. Normally, 50% of retention monies are released upon the issue of a Taking Over Certificate (Clause 49.1) and the ensuing period, known as the Defects Liability Period (Clause 49.1) commences; usually for one year. Within that period, the Contractor must return to site to complete any outstanding work and remedy any defects (Clause 49.2). Upon successful and satisfactory carrying out this work, the remaining 50% of the retention monies will be released.

Extent of the Works

The scope of the Works defined within the contract documents should be of such detail that the Contractor has little problem defining his overall obligations. There are, however, some areas which will not be defined adequately but it is hoped that a contractor is of such experience that he can, at tender stage, allow for possible risks that a reasonable and competent contractor would envisage. Sadly, not all 'risks' can be allowed for and it can be considered unreasonable for the Employer/ Engineer to expect this.

1. Essential but Undefined Works Expressly or Impliedly Included

It is quite normal and accepted that the documents which constitute the formal contract cannot be expected to cover every last detail of the engineering process. The Contractor has to make certain assumptions as to how he carries out his work, using his experience and knowledge of usual conditions on site and the materials that he would be expected to utilise.

If the Engineer has utilised a standardised method of production of a Bill of Quantities, then the contractor can rely on this document to price his work and formulate his intended method of working. If there is any error or omission then the Contractor would have a reasonable entitlement to additional payments.

2. OBLIGATIONS AS TO DESIGN AND QUALITY OF MATERIALS AND WORK

The Contractor has his own choice as to methods of working and in which order he constructs the Works. He also chooses the materials and their source as long as they conform to the Specification i.e. 'Fit for Purpose'. In all he has to construct the Works with skill and care using accepted and good building practice.

Design and Suitability

If Contractor's design has been specified.

This is not usually applicable to civil engineering projects - but can happen. There are often occasions when the Contractor is required to undertake minor areas of design such as choice of method of working or materials (possibly their erection processes). Usually design such as this is undertaken for temporary works. In all, the Contractor's obligation to the Employer is to provide labour, plant and materials and supply the judgement to construct the project.

Contractor's duty to 'warn'.

A reasonably competent contractor should 'warn' if he considers, in his judgement, that the design is likely to fail or be unsuitable. This does not relieve him of his obligation to construct the Works, however, as he has already given an undertaking, when tendering for the work that he has assessed the situation and can complete.

This 'duty' is not limited to design issues but also to his workmanship. Any 'warnings' should be communicated to both the Employer and the Engineer in writing.

Nominated Sub-contract design.

There is no direct authority to indicate that the Contractor is responsible for a Nominated Sub-contractors design (unless there is an express undertaking within the documents for the Contractor to design). When the Contractor enters into a sub-contract with the 'specialist', however, he becomes responsible for his work.

Design, performance and suitability of the Contractor's work.

The Contractor expressly warrants undertaking the Works in conformance with the plans, drawings and the specification. He will be liable if he does not perform and will not be entitled to additional monies. Reliance is placed upon his declared skills to complete the Works.

Bye-laws/ conformance with laws.

Generally speaking the Contractor is to comply with any laws which may affect the way he undertakes his obligations. Examples would be such things as structural safety and public health, whereby adverse activities by him may affect safety to personnel working on the site or the general public.

b. Materials

All materials supplied on the project should be 'fit for purpose', without defects. If the specification has been prepared correctly then it will adequately describe the materials leaving the Contractor in no doubt as to the quality of materials required on the finished project.

c. Workmanship

The requirements of workmanship are an implied condition of the agreement. The Works should be carried out skilfully and in a good and workmanlike manner and the finished product should be merchantability. To reiterate, the theme of design and suitability obligations, the Employer 'purchases' the Contractors' judgement, labour and skill.

d. Work to the satisfaction of the Engineer

There are express terms within the agreement to allow the Engineer access to the site to administer the Contract. The Engineer under his terms of reference to the Employer (and within the conditions) has to approve work upon completion and notify the Employer that he is satisfied that the Works are complete and free from defects.

3. OBLIGATIONS AS TO PROGRESS

The documents usually contain express provisions as to the time-scale in which the Contract is to be completed. Clause 41 requires the Contractor to commence the Works as soon as he has been notified by the Engineer. Thereupon he shall 'proceed with the Works with due expedition and without delay'.

Clause 43 refers to the Time for Completion (as stated within the appendix to the tender) and the Contractor shall continue his work up to the point when he considers he has 'substantially' completed. At this point Clause 48.1 requires him to notify the Engineer that he will 'finish with due expedition any outstanding work during the Defects Liability Period'. The Contractor will take receipt of a notification from the Engineer (in the form of a Taking-Over Certificate) detailing, in the Engineer's opinion, any outstanding work or defects.

Note should be made of the obligations placed upon the Contractor pursuant to Clause 46 (Rate of Progress). The Engineer is responsible for monitoring the Contractor's progress in relation to his Clause 14 submission (the Contractor's programme of works). Should, for any reason, (whereby the Contractor is not entitled to an extension of time) the progress be too slow, then the Engineer shall inform the Contractor and instruct him to expedite the Works. This is not an acceptance by the Engineer that the Contractor is entitled to additional payment for acceleration. Invoking this clause can be a prerequisite to a notification pursuant to Clause 63.1. (d) (Default by the Contractor). Care should be exercised, however, by the Engineer when invoking either of these clauses. A full examination should be undertaken to establish the facts surrounding the reasons for the Contractor's rate of progress. It may well be that the Contractor is fairly entitled to an Extension of Time.

Notwithstanding the above, the Contractor is entitled to ask, pursuant to Clause 45 (Restrictions on Working Hours) for a relaxation of any restrictions of working hours which may have been imposed within the agreement and the Engineer should grant him every facility to rectify his problems.

4. NOTIFICATIONS

These are important aspects of the contractual agreement. In FIDIC there are a number of clauses which specifically require all the parties (Employer, Engineer and Contractor) to notify each other as the occasion arises. Failure to comply with these strict requirements could be construed as a breach of the agreement.

The Contractors obligations with regards to supplying notifications or 'notices' can be catalogued as follows:

Clauses 6.1 & 7.2: If the Contractor is required under the agreement to design any part of the Works then he shall submit such design to the Engineer for his approval.

Clauses 14.1 &14.2: A programme of the Works shall be submitted to the Engineer for his consent, together with a description of the methods which the Contractor intends to adopt to further the Works. Should the Engineer so desire it, then the Contractor shall provide a revised programme.

Clause 14.3: This clause requires the Contractor to provide to provide quarterly 'cash-flow' estimates. Again, the Engineer can request revisions should he desire them.

Clause 27.1: The Contractor is to immediately inform the Engineer if fossils, coins or antiquities are found.

Clause 35.1: the Engineer may request details of the Contractors' labour and equipment. This includes operatives and staff members.

Clause 44: This deals with extensions of time to the Contract Period and the Contractor is to provide details, within 28 days of an event occurring, of any extensions of time he considers he is entitled to. If it is a series of events or is 'on-going' then the Engineer shall set a reasonable time in which these particulars are to be submitted. In practice the latter situation often prevails.

Clause 45: The Contractor is to advise the Engineer should he consider that emergency work should be undertaken to safeguard life or protect the Works. Although this clause specifically places restrictions on 'working-hours' these can ignored if the situation is so serious.

Clause 52.4 : Should the Engineer instruct the Contractor to carry out varied work in the form of 'dayworks' then the Contractor shall, on a daily basis, submit records of all labour, plant and materials utilised. The Engineer shall agree such records and at the end of the month the Contractor shall 'price' these records and submit them in his request for payment. Failure to adhere to these requirements will render the Contractor's request for payment invalid. This is a strict requirement and the Contractor should be encouraged to co-operate, as this area is often a source of dispute.

Clauses 53.1, 53.2 & 53.3: Notification of the Contractor's intention to 'claim' for additional work or circumstances is a pre-requisite to payment. This should be strictly enforced. Following such notification, the Contractor shall keep the records which support his contentions and submit them to the Engineer, on a daily basis or at such intervals as the Engineer deems necessary. These records will be inspected by the Engineer and copies kept for future reference, when the Contractor submits a detailed account of the 'claim' within 28 days (or at such periods the Engineer deems reasonable) of the event or events occurring. Note the contents of Clause 53.4. Should the Contractor fail to adhere to the requirements of the preceding clauses then he will lose his entitlements to additional payments, but only in respect that the Engineer, or an appointed Arbitrator, can establish by examining submitted and verified records. Again, the Contractor should be encouraged to keep full and detailed records, as this is another area where major disputes occur.

Clause 56.1: The Engineer measures the Works as they proceed. The Contractor should be notified when the Engineer proposes to carry out any measurement and he has a right to be in attendance. If, however, he chooses not to attend then any measurement taken by the Engineer is taken as approved. Likewise, if the Engineer chooses to prepare records and drawings then the Contractor has 14 days to examine them. If he chooses not to, they are deemed as agreed.

Clause 58.3: Should the Engineer need to expend any Provisional Sums contained within the Bills of Quantities then he shall instruct the Contractor to undertake such work. The Contractor shall provide the Engineer with any vouchers, records and invoices for the supply of labour, plant, goods, materials or services and the Contractor shall be entitled to receive payments for any expenditure.

Clause 59.5: Under this clause the procedures for paying Nominated Sub-Contractors are outlined. The Contractor has to provide proof to the Engineer that he has paid the Nominated Sub-Contractor monies due to him certified in previous certificates for payment. Failure on the Contractor's part, without good reason, can lead to the Employer paying the Nominated Sub-Contractor direct.

Clause 60: This clause outlines the procedures for monthly payments. The Contractor shall submit to the Engineer after the month's end six copies of a statement detailing the amount that he considers he should be paid for work completed to the end of that month. The Engineer, if he agrees and the amount shown exceeds the minimum payment (detailed within the documents), will recommend payment to be made by the Employer.

All notices shall be in an agreed form and shall be sent by post, or other electronic media if agreed, to the respective addresses prescribed within Clause 68.2 of the Contract.

5. OBLIGATIONS FOLLOWING SUBSTANTIAL COMPLETION

Following **Clause 48.1**, the Contractor shall complete the Works and undertake any outstanding work or remedy or apparent defects (**Clauses 49.2 & 49.3**). Other clauses exist which outline the procedures after substantial completion:

Clause 33.1: After the issue of the Taking-Over Certificate the Contractor shall clear the site.

Clause 50.1: If a defect should be discovered then the Contractor shall search for the same and remedy. He will not be paid for this work if he is found to be liable for this defect/ fault.

Clause 60.5: This clause outlines the procedures for the detailed statement at completion which follows 84 days after the issue of the Taking-Over Certificate.

Clause 60.6: Within 56 days of the issue of the Defects Liability Certificate, then the Contractor shall submit a draft Final Account in the form prescribed by the Engineer. The Engineer can request further and fuller particulars.

Clause 60.7: This is the Discharge when the Contractor is obliged to submit to the Engineer and Employer a warranty that his Final Statement is the full and final settlement figure of all the monies he contends are due to him.

(Note: World Bank SBD changes Clause 60).

CONCLUSION

The main clauses which indicate the Contractors obligations and duties are catalogued below:

Clause	Description	Explanation
1.5	Notices, Consents, Approvals Certificates and Determinations	Ensure that they are not delayed and in writing.
2.3	Engineer's Authority to Delegate	The Contractor can refer queries of ER to the Engineer.
2.5	Instructions in Writing	Whilst the Contractor has to comply with all instructions from the Engineer, the Contractor should confirm oral instructions within 7 days (the instruction then deemed to be in writing unless the Engineer contradicts within 7 days).
3.1	Assignment of Contract	The Contractor cannot assign the contract unless approved by the Employer.
4.1	Sub-contracting	The Contractor cannot subcontract the whole of the Works. He can subcontract parts following approval by the Engineer.
6.1	Custody and Supply of Drawings and Documents	The Contractor is to return all drawings, at the issue of the Defaults Liability Certificate.
6.2	One Copy of Dwgs to be Kept on Site	For inspection and use by Engineer.
6.3	Disruption of Progress	To notify the Engineer (with copy to the Employer) if delay of issue of drawings or instructions may delay the Works.
7.1	Supplementary Drawings and Instructions	The Contractor to carry out work shown on and be bound by additional drawings and instructions.

Clause	Description	Explanation
8.1	Contractor's General Responsibilities	This clause should be read and understood. It clearly outlines the Contractors main obligations.
8.2	Site Operations and Methods of Construction	Again, this clause should be read and understood.
9.1	Contract Agreement	The Contractor may be asked to enter into and execute the Contract Agreement. All costs are borne by the Employer.
10.1 & 10.2	Performance Security	If required, to provide the proper performance security within 28 days of Letter of Acceptance. This period to last until Works are complete and defects remedied. The Employer may claim under Clause 10.3.
11.1	Inspection of the Site.	This is important. The Contractor will be deemed to have inspected the Site and examined any information made available by the Employer.
12.1	Sufficiency of Tender	Following clause 11.1 the Contractor has expressly warranted that his Tender considers all known eventualities.
12.2	Note Foreseeable Physical Obstructions and Conditions	Contractor to give notice to Engineer and copy to Employer should circumstances arise.
13.1	Works to be in Accordance with Contract.	Again this clause should be read and understood.
14.1, 14.2 & 14.3	Programme to be Submitted	The Contractor should submit his programme within a period stipulated in the documents. The Engineer will need to monitor progress so that he can supply information when needed. Revised programmes can be requested. Additionally the Contractor must submit a cash-flow.
15.1	Contractor's Superintendence	To be adequate and conversant with the language named within the document.
16.1	Contractor's Employees	Obviously these must be competent. The Engineer can, following Clause 16.2 have employees removed from the Site.
17.1	Setting Out	The Contractor is responsible for the setting-out of the Works (following receipt of data from the Engineer).
18.1	Boreholes and Exploratory Excavation	To be carried out under instruction from the Engineer. They may be required in the documents or as a variation.
20.1	Care of Works	The Contractors full responsibility until issue of the Taking-Over Certificate.
21, 22, 23, 24 & 25	Insurances	These clauses should be read and fully understood.
26.1	Compliance with Statutes, Regulations	Should be complied with.
27.1	Fossils	Contractor to follow the procedures.
28.1	Patent Rights	To comply with this clause and indemnify the Employer if breached.

Clause	Description	Explanation
28.2	Royalties	The Contractor responsible to pay all tonnage, royalties etc. for acquiring store etc.
29.1	Interference with Traffic and Adjoining Properties	Follow requirements.
30.1	Avoidance of Damage to Roads	Follow requirements.
30.2 & 30.3	Transport of Contractors Equipment or Temporary Works/Materials or Plant	Contractor liable for all costs in transportation, such as strengthening bridges etc.
31.1 & 31.2	Opportunities/Facilities for Other Contractors	The Contractor is to co-operate and allow other contractors to carry out their work. If requested to supply facilities (reimbursed by the Employer).
32.1 & 33.1	Contractor to Keep Site Clear and Clearance of Site on Completion	The Contractor must keep the Site clear- it can be viewed as a safety precaution. He must also clear the Site on completion.
34.1	Engagement of Staff and Labour	The Contractor makes his own arrangements and under Clause 35.1 is required to keep returns of labour and plant.
36.1	Quality of Materials, Plant and Workmanship	Not only must they be to the Specification but also 'fit for purpose'.
37.1	Inspections of Operations	Contractor to give access to Engineer to inspect where materials and plant are being manufactured.
37.2, 3 & 4	Inspection and Testing	The Contractor to obtain permission from the Engineer to inspect after arranging dates and times. If testing proves faulty then the Contractor to make good.
38.1 & 38.2	Examination of Work before Covering up and Uncovering and Making Openings	The Engineer to be given access to measure the Works prior to covering up. The Contractor to bear the cost of uncovering if Works found to be faulty.
39.1 & 39.2	Removal of Improper Work, Materials or Plant	The Engineer to instruct removal. If Contractor fails then other contractors to do and Contractor pays.
40.1	Suspension of Work	The Engineer may instruct this and the Contractor will protect the Works.
40.2	Engineer's Determination following Suspension	The Contractor and Employer to be consulted regarding costs and E.O.T.
40.3	Suspension lasting more than 84 Days	Important to note. The Contractor, after 84 days, can give notice (within 28 days) to recommence the Works. If no possession then the Contractor may treat the Works as omitted. Should the Suspension affect all of the Works then Contractor may treat it as a default by the Employer (Clause 69).
41.1	Commencement of Works	Contractor to commence following notification by the Engineer. Must work without delay.
42.1	Possession of Site and Access Thereto	The Contractor (if required) may have to give details of access etc.
42.2	Failure to give Possession	Should the Employer fail to give Possession then the Contractor must give notice.

Clause	Description	Explanation
44.1	Extension of Time for Completion	Should the Contractor consider that he is entitled, then he shall give notice (Clause 44.2 and Clause 44.3).
45.1	Restriction on Working Hours	The Contractor can request to work additional hours (also in Clause 46.1).
48.1	Taking-Over Certificate	Notice to the Engineer of substantial completion. Contractor must give undertaking to complete minor works.
49.2	Completion of Outstanding Work and Remedying Defects	Must comply with this clause. Following 49.3 then Employer will employ someone else to complete and deduct sums due to Contractor.
50.1	Contractor to Search	If defects are not his fault then Contractor will be reimbursed.
51.1, 2	Variations	Contractor must follow Engineer's instructions. Cannot undertake additional work without instructions.
52.1, 2	Valuation of Variations	Contractor is consulted along with Employer. The Engineer can fix rates. If Contractor unsatisfied then must give notice within 14 days of instruction.
52.4	Daywork	Following instruction to carryout Daywork then Contractor must provide records for agreement. At end of month must provide a priced statement.
53	Notice of Claims (this is an important Clause)	The Contractor must give notice within 28 days of event. Must keep records. Must substantiate (as clause) precisely. Should the Contractor fail then his 'claim' may be reduced.
54.1	Contractor's Equipment, Temporary Works and Materials	Contractor cannot remove from site without Engineer's consent.
54.5	Condition of Hire of Contractor's Equipment	Contractor must ensure that Employer can hire at same rates.
54.7	Incorporation of Clause in Sub-Contracts	Ditto.
57.2	G8-72	Within 28 days of letter of Acceptance must submit breakdown of any lump-sums contained in Tender.
58.3	Production of Vouchers	Must produce all quotations, invoices etc. on request of Engineer.
60	Certificates and Payment	Must submit at end of each month a statement detailing work completed (may be in the form requested by Engineer).
60.5	Statement at Completion	Within 84 days of Taking-Over Certificate must submit a statement at completion.
60.6	Final Statement	Within 56 days of Defects Liability Certificate must issue a draft Final Account.
60.7	Discharge	On complying with 60.6 must give written Discharge which should represent the full and final settlement.
60.9	Cessation of Employer's Liability	This is important. Contractor cannot introduce additional 'claims' following clause 60.7.

Clause	Description	Explanation
65.6	Outbreak of War	Contractor must attempt to complete the Works unless contract terminated.
65.7	Removal of Contractor's Equipment on Termination	Must remove immediately (if he can).
67	Engineer's Decision, Amicable Settlement, Arbitration, Failure to Comply with Engineer's Decision.	Contractor must comply with requirements of this clause.
69.1	Default of Employer	Should Employer 'default' then Contractor may notify the Employer (with copy to Engineer) and then 14 days after giving notice remove his plant and equipment (69.2).
69.4	Contractor's Entitlement to Suspend Work	Should Employer not pay or delay statement then Contractor may suspend or reduce rate of progress. Following 69.5 the Contractor will resume normal working if Employer pays interest on overdue sums.

Appendix 7-12 - Guideline CA7 PE's Administration Duties

GUIDELINE N° CA7

Ethiopian Roads Authority

Guideline N° CA7

PE's Administration Duties

Contract Administration Manual

December 1999
Rev November 2006

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
ETHIOPIAN ROADS AUTHORITY
CONTRACT ADMINISTRATION DIVISION

PE's ADMINISTRATION DUTIES

May 2000

CONTENTS

Introduction

This guideline was first prepared in March 2000. Because of changes in the ERA organisational structure it has now been revised. It was prepared for the Ethiopian Roads Authority's Construction Contract Implementation Division (CCID). Under the present organisation structure of the Division, the administration of construction contracts is the prime responsibility of the Implementation Branch of the CCID. On all current contracts of the RSDP ERA are 'the Employer' and a consulting engineering firm has been appointed by ERA to act as 'the Engineer' to supervise construction works. This guideline has therefore been written for contracts that are to operate in this manner and encompasses ERA's role as Employer and for ERA staff acting as the Employer's Representative.

1. Appointment of Project Engineer

Every project and preferably every contract, as most projects comprise of more than one contract, should have a project counterpart. For the purposes of distinguishing between design projects and construction projects it is suggested that the terms Project Engineer and Assistant Project Engineer are used for the latter, instead of project counterpart.

The PE should be delegated sufficient responsibility and encouraged by ERA management to take decisions without constantly having to refer matters to more senior personnel. Some matters will of course, require that the PE confirms his decision or response with superiors. If he is in doubt about his response he can also seek advice from the technical assistance staff working in ERA. The designated PE should be based in ERA headquarters and ERA should inform both the Contractor and the supervising consultant of who he[*] is.

2. Familiarisation with Contract Details

One of the PE's first jobs is to familiarise himself with the relevant contract details - i.e. to go through the contract documents and specifically the conditions of contract, the specifications and contract drawings. He should know the basic details of construction - i.e. road cross-section, pavement design and should read (and understand) the materials and engineering reports.

The PE should read the existing files containing the tender and contract details and have discussions with the project engineer who was involved in the design and/or design review stages. The PE should instigate a filing system for project correspondence (which will probably be different from ERA's one-file system).

The PE should arrange an introductory meeting with the supervising consultant to discuss the contract, especially those sections of the Works where construction, accommodation of traffic or materials may not be straight forward. Lines of communication should be established between ERA and the consultant. (see Section 3 below).

3. Administration Matters

The Project Engineer will be the initial point of contact for the consultant's site staff's (Engineer's Representative) day to day/routine communications with ERA. The PE will be the point of contact for the Engineer in the first instance if matters dictate that decisions are taken 'above' site level.

The PE should advise and give assistance to the supervision consultant on how to obtain work permits if they are new to the country and could also give guidance, if requested, on the procurement of any locally available items. If any matters require action by, or assistance from, the CCID's Administration Section the PE should liaise with them.

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[*] throughout this guideline the Project Engineer is referred to as 'he'. In all cases 'he' can be replaced by 'she' if the Project Engineer is female.

4. Land Acquisition and Removal of Obstructions

Ideally, before the notice of commencement is given ERA should have acquired the necessary land and accesses to the site. Property affected by the construction work will have been identified during the design or design review stage and the land acquisition report itemises those properties or cultivated land which may require compensation payments to be made to the owners (lessees). The procedures for arranging/making any compensation payments should be well advanced prior to the Contractor arriving on site.

Arrangements should be in place to make the borrow pits and quarries identified during the pre-construction stage available to the Contractor from the start of the contract. The Contractor may or may not use such borrow pits and quarries, he may locate other sources which he considers to be more suitable. It is the Contractor's responsibility to provide material that complies with the specification and although his requirements for land for borrow pits and quarries may not be known until he has carried out investigations, the sources identified during the design stage should be available for him to commence activities such as removal of overburden, stockpiling etc. if this is necessary.

There may be some matters of land acquisition which cannot be resolved until the Contractor arrives on site and has prepared his programme for the Works. Areas for site camps, and how he intends to accommodate traffic can only be addressed after he has advised the Engineer and the Employer of his intentions. The Assistant Project Engineer should then act immediately and must take full responsibility to follow up the procedures that are necessary, ensure that they are completed as quickly as possible and that compensation payments are finalised. This will no doubt involve discussions with and action by, amongst others, the Legal Division. The PE should monitor progress to ensure that any other parties involved act efficiently to process whatever is required.

It is normal practice for the **Engineer** to issue the notice to commence the works to the Contractor. At the same time as this is issued the **Employer** usually grants possession of 'so much of the Site, and such access … as may be required to enable the Contractor to commence and proceed with the execution of the Works'. Clause 42.1 also states that possession and access to site shall be given in accordance with the programme referred to in Clause 14 and that the Contractor shall give notice to the Engineer of his requirements. This conflicts to an extent with giving possession with the notice to commence the Works. It is suggested that giving sufficient access to the site with the notice of commencement and at the same time requesting which parts of the Site the Contractor requires to possess to commence and proceed with the works, should protect ERA from any possibility of Sub-Clause 42.2 being invoked. That is assuming, of course, that the Employer gives possession when requested to, without undue delay.

If the Contractor does not have possession of site when he needs to commence work he is entitled to, and usually will, claim for being delayed under Sub-Clause 42.2.

The PE should visit the area of the Works before the Contractor commences on site and consult local representatives to explain the extent of the construction work in their area. Areas of significance and land which may be sensitive to residents can then be identified. This could avoid the Contractor being disrupted by local inhabitants during the contract.

5. Transport and Site Facilities

ERA must ensure that transport is available for all PEs so that when they are required to visit site they can do so without delay.

The PE should visit site at least once a month - for the monthly progress meeting and will, at the very least, spend a couple of days on site so that he keeps up-to-date with construction activities and is available for discussions with the Resident Engineer. The number of visits of the Resident Engineer to Addis 'to see the Client' should be kept to a minimum and only if the PE is running

more than one contract and hence becomes unable to make extended visits to site should this be tolerated as a regular occurrence. The RE should be on site - not in ERA headquarters. If the PE wishes to observe construction operations to enhance his knowledge and increase his experience this should be possible by extending his monthly visit or by making a subsequent visit during the month.

During the early stages of the contract the PE should attend all the monthly progress meetings. These meetings should be arranged on consecutive days for the various contracts on the same project, to minimise his travelling. The workload of each PE should be monitored by the CCID management to assess if any ERA PEs are becoming overloaded. Action will then have to be taken to alleviate this situation.

6. Contractual Responsibilities

For the Works to progress properly the contractual relationships of each of the two parties to the contract - the Employer and the Contractor - should be fully observed. The DFID team prepared a guideline on this, which also includes the Engineer's responsibilities, which should be referred to. For ease of reference, however, Appendix I herein contains a list of the Employers responsibilities under the various clauses of the FIDIC Conditions of Contract. The PE must be aware of these and should also be fully familiar with ERA's contract with the consulting firm who are appointed as the supervising consultant/Engineer for the contract.

The PE should develop a good working relationship with the consultant's supervisory staff, but at the same time the PE will be monitoring that the consulting engineers are undertaking their duties in accordance with their contract. The PE must be cognisant of the Engineer's general duties and responsibilities and in particular the limitations that may be imposed under the Particular Conditions of Contract (for WB contracts sub-clause 2.1 and for EDF contracts article 5).

7. Contract Securities

Approval is required from the Employer for the performance security and advance payment security. If this has not been already agreed by ERA then the Project Engineer will have to advise the Engineer of their acceptability (or otherwise). Consultations with senior ERA staff and the Legal Division may be necessary. If either is not acceptable then the Contractor must be advised to obtain the security from another source (or amendments made if the error is minor).

Consideration could be given for tenderers being requested to advise at tender stage who they **intend** to provide the performance security, in the event that they are awarded the contract. Investigations could then be made by the consultant evaluating the bids, as to the suitability of the guarantor(s) of those tenderers in the running for the award of the contract.

As Clause 10.3 of FIDIC Part I has been deleted in ERA's documents, there is no obligation for ERA to notify the Contractor of the nature of the default prior to demanding payment from the guarantor. However, it can be assumed that the guarantor will immediately advise the Contractor on receipt of such a demand, and the Contractor will request notification as to the nature of the default. Although theoretically/contractually this should not affect payment of the demand by the guarantor, the Contractor will often threaten the guarantor with legal action if he does pay. It is therefore good practice to provide the Contractor with the reason of the default. It will, of course, be required for the likely ensuing legal actions.

If ERA intend calling the performance security, the matter will have been discussed fully with the Engineer, as **usually** such an action will have resulted from a recommendation from the Engineer, and not through ERA's own volition.

8 Information and Approvals

One of the principal responsibilities of the PE is to ensure that any information or assistance requested by the Engineer or the Contractor is given in good time and that the Contractor (particularly) is not delayed by a lack of information or by matters which require the Employer's assistance.

The PE should request that a release of information schedule is prepared (if one is necessary) by the consultant which indicates dates for issue of information/drawings to the Contractor and which corresponds to the Contractor's programme.

Any confirmation which is required, under the Conditions of Contract (e.g. sub-clause 2.1 of the Particular Conditions of Contract), to be given by the Employer to the Engineer before he advises/instructs the Contractor on a particular subject, has to be given without delay. If decisions are required they must be made quickly. The PE should, however, ensure that they are not making decisions that should be made by the Engineer. Correspondence requesting approval from the Employer should contain recommendations made by the Engineer. It has been noted on previous contracts that the Engineer sometimes expects ERA to make a decision without the Engineer recommending a course of action. Clearly, this makes ERA's decision more difficult and can lead to delays in response by ERA. For example, requests from the Contractor to the Engineer are sometimes just forwarded on to the Employer with a covering letter for a decision by the Employer. The Engineer should investigate the situation thoroughly and advise the Employer on reasons why the Employer (or Contractor) should follow a certain course of action. It is not the responsibility of the Employer to propose solutions to problems posed by the Contractor. The Engineer should do this and seek confirmation from the Employer, where such is required by the Conditions of Contract.

Again, the PE should consult the guideline on the responsibilities of the parties involved in construction works mentioned in section 6 above.

Assistance should be given to the Contractor if liaison is required with other Government Authorities or if Utilities Corporations have to relocate services. It is understood that procedures on current contracts require the Contractor to advise the Employer if services have to be relocated. The Employer then arranges for the relevant utility corporation to do the work and pays them directly. If delays occur in such instances it could result in a claim being made by the Contractor.

If there is any possibility that, for example, old landmines may be encountered on deviations or on new alignments the Contractor should be advised of this possibility. The PE and consultant should investigate these items thoroughly.

Customs procedures and the obtaining of radio and explosives licences have led to claims on previous projects, the Contractor contending that ERA did not act quickly to assist them, causing them to be delayed. These should not be allowed to become a point of claim on future contracts.

9. Sub-contractors Approval

Approval of sub-contractors may require confirmation from the Employer. If so, the Project Engineer is responsible for this. In the case of sub-contractors nominated by the Employer, such nomination must be made in sufficient time to enable the Contractor to perform his obligations under the contract.

If ERA undertakes work on site or employs other contractors, the Employer is responsible for the safety of these persons whilst on site. The PE should be aware of this.

10. Contract Programme

The Engineer monitors the overall progress of the Works. He should make the Employer aware of areas of construction that may be falling behind the contract programme. These, of course, will be discussed at the monthly meetings and will be highlighted in the Engineer's Report. The PE should, however, keep up-to-date on matters that may be affecting progress and require answers from the Engineer and Contractor. Often when progress falls behind schedule the Contractor may claim that he is being delayed by matters beyond his control. The PE should always try to establish the facts at monthly meetings and to question if this may be because of the Employer's lack of action or the Engineer's shortcomings. Resolving these matters may avoid a claim situation and/or deterioration in relations between the Contractor and the Engineer. In this latter case the PE should always be available to assist, listen to both party's viewpoints and act decisively to avoid such a situation becoming detrimental to the successful completion of the project.

The PE should be aware of disputes that may result from the Contractor objecting to a decision of the Engineer and claiming for extra expenditure he has incurred, or for a loss he states that he has suffered because of circumstances which he considers he could not have been expected to allow for in his tender. He should request both parties to provide information concerning the event and attempt to find a solution without undue delay.

11. Site Instructions, Variation Orders and Claims

The PE must be aware of (be issued with) any instructions given to the Contractor by the Engineer. The site instruction file should be reviewed every time he visits site. Some S.I.'s may need approval before issue but others may not. If there are financial implications to any of these instructions the PE should ensure that a Variation Order is issued by the Engineer and if so required, approved by him. The PE should ensure that the Engineer values all variations and that the Engineer copies all such details to him.

Any variation orders that could result in extensions of time should be advised to the PE by the Contractor and Engineer. The terms of the contract will generally require that the Employer has to approve such extensions of time before the Engineer notifies the Contractor. The PE must ensure that ERA responds quickly to such requests, and should consult more senior personnel and advisors as necessary.

Changes to the design or scope of the Works required/proposed by the Employer should be discussed initially with the Engineer by the PE and the Engineer will then issue the necessary instructions to the Contractor. The Employer/Project Engineer should not propose a change to the Contractor directly. The supervising consultant should also not make changes to the design (except **minor** realignments or level changes) or specification without referral to the design engineer and finally the PE. If errors in design become evident to the Engineer during construction or if the Contractor discovers such errors they should be brought to the attention of the PE. The PE should then communicate the Employer's requirements and authorise the necessary action to be taken by the supervisory team. In such cases he shall not propose a solution, that is the Engineer's job, but he will have to consider any financial and time implications and the correctness of the engineering solution before authorising the Engineer to order the change.

The procedure for dealing with claims is covered in the Conditions of Contract. The main responsibility of the PE is to ensure that the Engineer has provided a well considered and detailed response to the Contractor's claim. Many contractual claims for time and/or money revolve around Clauses 12, 44 and 51 and in each of these cases approval is generally required by the Employer before the Engineer gives his determination or certification to the Contractor. The PE must therefore review the Engineer's response thoroughly and reply to the Engineer as quickly as

possible. The PE must also ensure that the Engineer gives his recommendation to the Employer without delay.

It is considered to be inappropriate to discuss Clause 67 which concerns disputes and arbitration in this guideline, as other ERA personnel will also have become involved if a dispute situation develops.

12. Payment Certificates

An important part of the Project Engineer's duties is to ensure that applications for payment are processed quickly by both the Engineer and ERA. The PE, by visiting site regularly, should be in a position to agree the Engineer's certificate without too many queries. If liquidated damages are to be applied then the Employer deducts this (the Engineer does not deduct them himself on his certificate).

The PE should act on certificates for payment immediately he receives them. Ideally the PE can then pass them directly to the Finance Department for payment without having to refer to more senior Division personnel. Certificates will need to be monitored by the Branch or Division Head though as they are ultimately responsible for the project budget. If the Contractor is paid before the deadline for payment it often leads to better relations on site and assists the Contractor to carry out his obligations, as it improves his cash flow.

Sometimes disputes occur when the Engineer does not certify what the Contractor has claimed. Differences may occur due to a varying interpretation of what work has been completed. The PE needs to monitor if there are such differences and attempt to resolve the matter to the satisfaction of both parties. Such disagreements often lead to deteriorating relationships between the Contractor and the Engineer and can result in claims for underpayment by the Contractor.

The PE should carefully review the increases in cost under Clause 70 and should ensure that the Engineer has done so in his certification, especially with regard to the foreign and local currency proportions. The PE will ask the consultant to give him a summary of the escalation costs each month and should check the calculations during the early stages of the contract and periodically thereafter.

The ERA standard format for payment certificates and Contractor's application for payment have been as Appendix IV.

13. Reporting

The Project Engineer should advise the Engineer of ERA's requirement regarding the format and contents of the Engineer's monthly report. Standard formats for Progress Reports on Construction Contracts have been developed by ERA which have been modified by the EC Contracts Advisor, and these should be used. They are included as Appendix II.

One of the most important items of the report is the financial status of the contract. The Engineer should provide an estimated 'cost to completion' every three months. It is the PE's duty to ensure that there are sufficient funds available to pay the Contractor as the contract nears completion, so control of variations is essential. If quantities have increased due to site circumstances (and perhaps even under measurement at design or design review stage) this may result in an increase in the Contract Price which can be difficult to detect. It is vital that the Project Engineer is made aware of this by the Engineer and a quarterly estimate of the Final Contract Price should identify these items so that any requisite action can be taken.

The PE should prepare reports for the Branch Head and CCID Manager. Again a standard format for such reports is in use within ERA, which is included as Appendix III. Only the relevant sections should be completed in the early stages of the contract.

14. Concluding Remarks

The Project Engineer has a very important task to perform and can contribute considerably to the success of a construction contract. His principal aim should be to have a contract that runs smoothly and one on which all parties work together, including the Employer, to achieve the desired outcome, i.e. a project built on time, to specification, and as far as possible for the price quoted in the tender.

The PE should respond quickly to reports and letters from either the Contractor or the Supervising Engineer with a clear, unambiguous decision or answer to whatever has been requested.

To achieve this, the Project Engineer for each particular contract must:

(i) not be so overloaded with work that he cannot respond quickly.
(ii) have the ability and responsibility to do so.
(iii) take the initiative in resolving problems as and when they occur.

The PE should ensure existing formats for reporting are adhered to by the Engineer and that claims procedures required by the Conditions of Contract are followed by the Contractor.

If either the Contractor or Engineer does not appear to be performing adequately the PE should act to remedy this situation, initially in a helpful manner but if this does not have the desired effect he may eventually have to resort to a more forceful approach!

Appendix I - The Parties Obligations and Responsibilities

See the following for the content of this Appendix

Appendix 7-8 - Engineer's Specific Rights and Obligations

Appendix 7-11 - Contractor's Specific Rights and Obligations

Appendix 7-13 - ERA's Specific Rights and Obligations

Appendix II - Standard Format for Consultant's Progress Reports

See the following for the content of this Appendix

Appendix 7-16 - Guideline CA8 Monthly Progress Reports

Appendix III - Project Engineer's Progress Format

See the following for the content of this Appendix

Appendix 7-17 - Guideline CA9 PE's Site Visit Report

Appendix IV - Format for Engineer's Payment Certificate

See the following for the content of this Appendix

Appendix 6-7 - Guideline CA4 Consultant's Invoice

Appendix V - Format for Contractor's Monthly Statement

See the following for the content of this Appendix

Appendix 6-5 - ERA vs. IDA ICB SBD Clause 60

Appendix VI - Meetings

See the following for the content of this Appendix

Appendix 7-9 - Initial Site Meeting Agenda

Appendix 7-15 - Typical Site Meeting Agenda

Appendix 7-19 - Guideline CA11 Communications and Meetings

Appendix VII - Acceptance of Works

See the following for the content of this Appendix

Appendix 8-1 Guideline CA12 Acceptance of Work

Appendix 8-2 Guidelines CA13 Road Inventory

Appendix 8-3 Guideline CA14 Condition Survey

Appendix 8-4 - Sample Taking Over Letter

Appendix 9-5 - Defects Report Form

Appendix 7-13 - ERA Specific Rights and Obligations

ERA's Specific Rights and Obligations (FIDIC IV)

Rights	Sub-Clause
To be notified of the appointment of Engineer's Representative and assistants	2.3
To give consent to assignment of the Contract	3.1
To require the Contractor to complete a Contract Agreement	9.1
To require the Contractor to provide a Performance Security	10.1
To be jointly named on insurance policies	21.2
To be consulted by the Engineer on determinations of additional costs and/or extensions of time	various
To take out insurances (at the Contractor's cost) in the event of the Contractor's failure to do so	25.3
To deduct Liquidated Damages for delay from payments due to Contractor	47.1
To employ others to carry out remedial works if Contractor doesn't do them	64.1
To terminate the Contract upon the outbreak of war	65.6
To proceed to arbitration if dissatisfied with an Engineer's decision	67.1

Obligations	Sub-Clause
To appoint the Engineer	1.1
To define those duties of the Engineer which require prior approval	2.1
To make available site investigation data	11.1
To be responsible for his own workmen on Site	19.2
To give the Contractor possession of the Site	42.1
To define time(s) for completion	43.1
To make payments within 28 days of receipt of Interim Payment Certificates	60.10
To attempt to reach amicable settlement prior to arbitration	67.2

OBLIGATIONS AND DUTIES OF THE EMPLOYER

1 GENERAL SUMMARY OF THE OBLIGATIONS

Generally, it is viewed that the most important obligation that the Employer has is to make payments to the Contractor. Whilst this is true, there are other equally important obligations, which if not adhered to can lead to 'breaches' of contract resulting in the Contractor becoming entitled to additional payments.

2 ADMINISTRATION

Amongst his many duties, the Employer appoints an Engineer with delegated powers under Clause 2.1, giving the Engineer further powers to 'sub' delegate under Clause 2.3, so that he can efficiently administer the contract. The Engineer should be appointed (to reiterate, under a separate agreement) prior to the 'tender' period and the full details of his commission should be included in that agreement. Often ERA has to appoint a 'design review consultant' and they undertake the tender evaluation (World Bank preferred method of procurement), then a 'supervision consultant' is appointed as Engineer to monitor the Works. Any requirements as to notifying the Employer prior to actions being taken on site should be mentioned in the latter consultant's agreement and the contract documents so that the Contractor is fully aware of the limits of the Engineer's powers. It has become increasingly common in international contracts (indeed it is a requirement of the World Bank, adopted by ERA) to restrict the Engineer's powers. It is open to debate whether this sort of action is to the benefit of works contracts as a whole. Notwithstanding the foregoing there are specific clauses within the FIDIC conditions which require the Engineer to consult with the Employer/ Contractor before acting. Additional areas are inserted within the documents as amendments to Clause 2.1 in ERA contracts.

A particularly delicate area (often negotiated/ designed prior to the main contract award) is that concerning Nominated Subcontractors and Suppliers (Clause 59). Acting with the advice of an Engineer, the Employer would enter into negotiations with such organisations (specialists in particular fields) with an agreement to embody them into the main contract (when let) through the aforementioned clause. In general, however, it is recommended that this facility be disregarded so that the Contractor has to organise any specialist sub-contractors himself – it is not as common for Nominated Sub-Contractors to be used on civil engineering projects as in the building industry.

3. GIVING POSSESSION OF THE SITE

Requests have been made to include in this section discussions upon the Ethiopian Law of Acquisition of land. This is not relevant to this exercise. Land acquisition should have been settled prior to any award of a civil engineering project. To fail to do so could be construed as a fundamental breach of contract.

Hence, the main obligations can be catalogued as follows:

- Not to actively misrepresent the condition of the site.
- Give reasonable possession of the site.
- Give undisturbed possession of the site.
- Give good title to 3rd Persons.

Clause 41.1 states that 'The Contractor shall commence the Works as soon as is reasonably possible after the receipt by him of a notice to this effect…'

At this point the Employer must release the site or parts of it, subject to the requirements of the Contractor and outlined by him (if there are to be sectional completions) in the Clause 14 programme.

a State of the Site

There is no implied duty to disclose the condition of the site. Nor is there a duty to clear, survey or sink bore-holes etc. and to provide the Contractor with such information to enable him to prepare his tender. However, in reality, and bearing in mind that the Tender Period is usually short and the Employer/ Engineer would require such information to prepare 'cost-budgets' for forecasting future financial requirements, then such information is usually supplied. This does not mean that the Employer totally warrants the sufficiency of this information. Clause 11 specifically provides that the Contractor is responsible for his own interpretation of the data supplied/ made available. He has the opportunity to visit the site to satisfy him of its condition and determine any means of access.

The Employer would, however, be responsible for any misrepresentation of the facts pertaining to the condition of the site.

b Definition of the Site

This is especially important because of the very nature of engineering works. The area covered by the site can be extensive and in some cases vague or not totally in the control of the Employer (this is especially true of roadwork, where there could be bridges or underground pipelines that have to be protected or circumnavigated).

It is therefore essential to clearly define the 'site' within the contract documents – usually within the Specification and Drawings. The importance of this can be measured by the fact that the 'Site' is referred to in approximately 35 clauses of the FIDIC Conditions of Contract.

c. Length of Possession

On a new project there is usually 'total' or 'undisturbed' possession. There can, however, be a requirement for 'other' contractors to work on the site (Clause 31), but this should be clearly defined within the contract documents so that the Contractor can make due allowances in his tender/bid.

Many projects show a requirement for 'staggered' possessions or 'sectional' completions – these, again should be clearly defined at tender stage, so that the Contractor is left in no doubt as to the extent of his obligations.

The commencement date is normally indicated within the documents and any delay occasioned to the Contractor entitles him to an Extension of Time and/ or Costs (Clause 42.2).

It must be noted that the Contractor is entitled to total possession (or those sections indicated as 'staggered' possessions) of the Site until completion (or sectional completion). The Employer has no right to repossess, other than to have reasonable access to supervise/ administer (in the case of the Engineer, his representative) the Works.

d Part Possession – Shared With Others

1 Employer's own contractors (Clause 31)

The above clause expressly allows for the possibility of the Employer introducing 'other' contractors onto the site. The documents should clearly indicate if this is likely to occur, as 'claims' often arise if the Contractor cannot adequately allow for their activities when he produces his programme for the Works.

2 'Domestic' sub-contractors possession

The Contractor's sub-contractors are his responsibility. Should a dispute arise, under their separate contractual agreement, then the Contractor and his sub-contractor would 'join' their action against the Employer or resolve their problems amongst themselves.

3 Statutory Undertakers

These are a recurring problem on many engineering projects as they can often interfere with the Contractor's programmed intentions. The Employer should liaise with such bodies prior to the main contract implementation so that the Contractor can allow for their work within his programme. Any undue interference with his work can lead to a 'claim' under Clause 31.

4 Strikes and Industrial Action

The Contractor is responsible for the actions of his own employees. If industrial action, however, should occur amongst the Employer's own staff and this should interfere with the Contractor's own intentions then there is a possibility of a claim situation arising (Clause 31). If such action can be viewed as a serious disruption to the Contractor then it could lead to a Suspension of the Works (Clause 40) and a possibility of total frustration of the contract.

5 Other interferences by the Employer.

Other than 'clear-cut' cases of interference by the Employer, it should be borne in mind what the limits of the delegated powers of the Engineer or his assistants are. The Engineer can intervene to order the removal of defective permanent work or such temporary works that are dangerous (Clauses 20 and 39). The Employer and the Engineer cannot instruct the order of the Works or methods of undertaking them, unless this is expressly provided for within the documents.

4. SUPPLYING INSTRUCTIONS WHEN REQUIRED

Although the Employer usually appoints an Engineer to administer the Works, and therefore delegates most of his obligations to provide instructions and notices, there are exceptions. Following Clause 1.5 the Employer shall issue notices, consents, approvals, certificates and determinations. These obligations, in the form of notices, can be listed as follows:

a Under Clause 3 the Employer is required to respond to the Contractor's request to assign any part of the Works.

b The Employer is responsible (Clause 9) for the preparation of any contractual agreements requested.

c The Performance Security (Clause 10.1) is to be approved by the Employer. Furthermore, if the Employer wishes to claim under this clause for non-performance of the Contractor then he must inform him.

d Clause 11.1 requires that the Employer makes available any data he may have compiled as to the condition of the Site (the Employer has no express duty to prepare such information in the first place, however).

e Under Clause 22.3, the Employer is to indemnify the Contractor against the following:

1 Damage to property (other than the Works) or injuries to persons resulting from the 'exceptions in clause 22.2' (risks borne by the Employer).

2 Insurances, required under Clause 25.1, are to be submitted within 84 days of commencement and approved by the Employer.

3 The Employer is required to obtain planning and zoning requirements under Clause 26.

4 Currency restrictions imposed by the government are reimbursable to the Contractor (Clause 71).

5 APPOINTING AN ENGINEER

a Duty to make an Appointment (Clause 1.1).

The importance of appointing an Engineer is that he will undertake a number of different duties on behalf of the Employer, such as recommending the levels of interim payments, administration and adopting a 'quasi-arbitral' role in the settlement of disputes during the currency of the Works.

Clause 41.1 states that 'the Contractor shall commence the Works as soon as is reasonably possible after the receipt by him of a notice to this effect from the Engineer…' Whilst this is an obligation of the Engineer it demonstrates the contractual obligation of the Employer to make a prompt or timely appointment of an Engineer unless the contract make it quite clear that this obligation, inter alia, is to remain in the Employer's hands.

There is, therefore, an implied duty for the Employer to make an appointment – failure within a reasonable time could lead to a recession of the main contract agreement.

b After Appointment

The duties and obligations of the Engineer have been detailed elsewhere. The Employer's duties/ obligations in relation to the Engineer are specific. The Employer gives no warranty as to the adequacy of the Engineer's design and the Contractor must satisfy himself he has understood what is required of him and has inspected the Site (Clause 11.1).

The Employer owes a duty not to interfere with the Engineer when he is undertaking his duties. This could lead to a situation whereby the Engineer cannot act impartially and with discretion. This is a very important issue, as it can lead to a major breach of contract. Irrespective of the fact that it has become the normal procedure to 'limit' the powers of the Engineer under Clause 2; there are still many clauses of the contract where the Engineer has to consult with both the Employer and the Contractor prior to making a decision.

There is precedent to suggest that the Engineer, once he has made his mind up, in exercising his discretion cannot be unduly influenced by the Employer. Any breach of this implied term could place the Contractor in a position where he could recover damages. A good example could be viewed as the Employer changing the amount recommended for payment without a reasonable contractual excuse. A further example of an Employer's interference can be seen in relation to the progress of the Works. The Employer has a duty to obtain planning consents/ secure land acquisition to conform to the Contractors programmed requirements (i.e. in a timely manner). Although there are express provisions within the documents to allow the Contractor an extension of time should delays occur, there is also an implied term that the Employer should not interfere with the Contractor's progress or ability to complete his obligations. Additionally, there is provision in Clause 14 for the Engineer/ Employer to request sight of the Contractor's intended methods of working, and proposals as to how he intends undertaking the Works.

The Engineer/Employer, however, has no rights to dictate to the Contractor how he should carry out his activities. Lastly, as mentioned earlier, the Contractor should afford all reasonable assistance and co-operation to 'other' contractors on the site. If, however, he is prevented from carrying out his own activities he may be entitled to an extension of time and/ or recompense.

6. DUTY TO MAKE PAYMENTS PROMPTLY

As expected, the Employer is obliged to make payments for work certified by the Engineer, subject to the requirements and procedures outlined within Clause 60. Failure on the part of the Employer to follow such procedures could result in a serious breach of contract and the Contractor could invoke Clause 69 – default by the Employer, whereby he may suspend the Works or terminate the contract. The final settlement sum would depend upon the facts of the default and to what stage the contract had been completed.

Clause 60 expressly defines the Employer's obligations with regards to the timing of payments. These can be modified during the pre-tender period. The roots where payments are generated from are scattered throughout the contract conditions (see below).

Clause 60.1 stipulates that the Contractor shall be paid within 28 days of the issue of an interim certificate. In the case of the final certificate, then the period is within 56 days of issue.

Failure by the Employer to pay on time (Clause 60.1) allows for interest to be paid on outstanding amounts. This is important because pursuant to Clause 69 the Contractor is entitled to terminate the contract if the non-payments continue (subject to the procedures in the said clause).

Staging of payments is covered in Clause 60.2, subject to correct submissions by the Contractor, and the Engineer should, within 28 days of such a submission, certify to the Employer. (Note: World Bank SBD has different procedure for payment).

To reiterate, the sources of payments are contained within various clauses of the contract and can be demonstrated as follows:

Sub-clause
- 6.4 – delays and costs of delays of drawings issues.
- 12.2 – adverse physical obstructions or conditions.
- 27.1 – fossils.
- 36.5 – test for which there are no provisions.
- 38.2 – uncovering and making openings.
- 40.2 – costs following suspensions.
- 42.2 – failure to give possession of the site.
- 50.1 – contractor to search.
- 52 – valuation of variations and dayworks.
- 53.5 – payment of claims.
- 59.4 – payments to nominated sub-contractors.
- 60 – certificates and payments.
- 63.3 – payments after termination.
- 65.5 – increased costs arising from special risks.
- 65.8 – payment if contract terminated.
- 66 – release from performance.
- 69.3 – payment upon termination.
- 69.4 – contractor's entitlement to suspend the works.
- 70.1 – increase or decrease of costs (if applicable).
- 70.2 – subsequent legislation.
- 71 – currency and rates of exchange.

It is important to note that, pursuant to Clause 60.9, the Employer is not liable 'for any matter or thing arising out of or in connection with the Contract or execution of the Works, unless the Contractor shall have included a claim in respect thereof in his Final Statement and … in the Statement at Completion …'

7. CONCLUSION

Although the above details the more common areas where disputes arise, the table below describes all of the areas where the Employer's obligations lie. Many of these 'obligations', however, are merely the Employer's rights as to receiving notifications and to be 'consulted' in relation to the Engineer's and the Contractor's actions :

Clause	Description	Explanation
1.1	Definitions	To define the various parties roles and also important terms of the contract.
1.5	Notices, Consents, Approvals, Certificates and Determinations	Notices in writing.
2.1	Engineer's Duties and Authority	Definitions of limitation of powers
3.1	Assignment of Contract	Employer's consent required to any assignments by Contractor.
4.2	Assignment of Sub-contractors' Obligations	Following end of Defects Liability Period, Employer to pay for the benefit of using s/c.
6.4	Delays and Cost of Delay of Drawings	Engineer to consult with Employer (and the Contractor) to determine EOT and Costs.
9.1	Contract Agreement	To enter into legal relations with Contractor at Employer's cost.
10.1	Performance Security	To approve Contractor's choice of security institution and then notify Contractor when making a claim.
11.1	Inspection of Site	Make available information at tender stage.
12.2	Not Foreseeable Physical Obstructions or Conditions	To be consulted (along with Contractor) by the Engineer prior to determination of EOT and Costs.
19.2	Employer's Responsibilities	Responsibility of own workmen working alongside Contractor.
20.1	Care of Works	Following Taking Over Certificate, to be responsible for the Works.
20.3 & 20.4	Employer's Risks	To take responsibility for named Employer's Risks.
21	Insurances	To jointly insure with Contractor.
22.1 & 22.3	Damage to Persons and Property	To be indemnified by Contractor other than for exceptions in clause 22.2.
23.1 & 23.3	Third Party Insurance	Insure jointly with Contractor.
24.1	Accident or Injury to Workmen	Employer not liable unless he causes such problems
25.1, 2, 3, 4	Evidence and Terms of Insurances	To verify the adequacy of Contractor's insurances before start of work and within 84 days of commencement. The Employer may take out the cost of insurances and recover costs from Contractor.
26.1	Compliance with Statutes, Regulations	The Contractor to take responsibility and indemnify Employer if costs arise. The Employer, however, must secure planning consents etc.

Clause	Description	Explanation
27.1	Fossils	Employer's ownership following adequate notification from Contractor. To be consulted (with Contractor) by Engineer prior to award of EOT and Costs.
28.1	Patent Rights	Contractor to indemnify Employer.
29.1	Interference with Traffic and Adjoining Properties	Contractor to indemnify Employer
30.2, 3	Transport of Contractor's Equipment or Temporary Works, Materials or Plant	Contractor to indemnify Employer for any damage.
36.5	Engineer's Determination where Tests not Provided for	Engineer to consult Employer (along with Contractor) prior to award of EOT and Costs.
38.2	Uncovering and Making Openings	Engineer to consult Employer (along with the Contractor) prior to award of EOT and Costs if to be added to Contract Price.
40.2	Engineer's Determination following Suspension	Engineer to consult (along with Contractor) prior to determination of EOT and Costs.
40.3	Suspension lasting more than 84 Days	Employer should be aware that Contractor may omit work and terminate Contract (Cl. 69).
42.1 & 2	Possession of Site and Access Thereto, Failure to Give Possession.	Employer to give in accordance with agreed programmes, proposals and Contract requirements. To be consulted by Engineer prior to award of EOT and Costs.
44.1	EOT for Completion	Engineer to consult (along with Contractor) prior to award of EOT and Costs.
46.1	Rate of Progress	Engineer to consult (along with Contractor) for additional costs incurred to supervise the Works by Engineer's staff.
47.1	Liquidated Damages for Delay	To recover money from Contractor when due.
48.2	Taking Over of Sections or Parts	This <u>can</u> be done, even if not provided for in the Contract. The Engineer must issue a Taking-Over Certificate.
49.4	Contractors Failure to Carry Out Instructions	The Employer can employ other contractor and recover costs.
51.1	Variations	The Employer cannot undertake work omitted by the Engineer.
52.1	Valuation of Variations	The Engineer to consult with Employer and Contractor <u>prior</u> to agreeing suitable rates and prices with the Contractor.
53.5	Payment of Claims	Consultation between all parties prior to award.
54.3	Customs clearance	Employer to assist Contractor.
60.3 & 60.8	Payment of Retention Money and Final Payment Certificate	Pay amounts certified by Engineer.
60.10	Time for Payment (Note: World Bank SBD changes Clause 60)	To pay the Contractor within 28 days of receipt of certificate. The Contractor <u>could</u> if payment is late, slow down his work <u>or</u> repudiate the Contract.
62.1	Defects Liability Certificate	The Engineer issues this on completion of Works.
63.1	Default of Contractor	The Employer can enter Works, terminate the Contract and complete himself.

Clause	Description	Explanation
65.6 & 65.8	Outbreak of War	Employer can terminate contract.
67.1	Engineer's Decision	Refer to Engineer for adjudication of dispute.
67.2	Amicable Settlement	Attempt to settle disputes within 56 days prior to Arbitration.
67.3	Arbitration	Refer disputes to Arbitration, following procedures laid down in Clause 67.
67.4	Failure to Comply with Engineer's Decision	Can refer to Arbitration if Contractor refuses Engineer's decision.
69.1 & 69.3	Default of Employer	Receive such notice as necessary from Contractor in the case of a default. Make payment/damages.
69.4	Contractor's Entitlement to Suspend Work	If Employer makes late payments, Engineer to establish EOT and Costs.

Appendix 7-14 - ERA Filing System

This schedule is presented as a compliment to Appendix 5-7 - Proposed ERA Filing System. It is suggested that the PE should maintain files for at least the following subjects:

1. Correspondence (to/from)

    - ERA internal correspondence
    - The Engineer
    - The Contractor
    - The Funding Agency
    - Others e.g. Utility companies, DRE etc.
    - Funding Agency

2. Meetings

    - Monthly Site Meetings
    - Other Meetings

3. Reports

    - Monthly Site Reports
    - Other Reports
    - Funding Agency Reports

4. Right Of Way

5. Programmes

6. Design and Design Changes

7. Financial Control

    - Interim Payment Certificates
    - Variation Orders
    - Provisional and PC Sums
    - Cash Flow
    - Final Estimate

8. Claims

9. Contract Administration Manual (CAM)

    - Environmental Management Plan
    - Social Management Plan
    - Aids Awareness Campaign/Aids Prevention Campaign
    - Safety Plan

10. Contract Documents

    - Agreement
    - Conditions of Contract
    - Specification
    - Bill of Quantities

Appendix 7-15 - Typical Site Meeting Agenda

Monthly Site Meeting Agenda

1. Present
2. Apologies
3. Visitors to site during previous month
4. Minutes of previous meeting
5. Matters arising
6. Progress and Programme
   - 6.1 Review of overall progress
   - 6.2 Review progress on major works items in the BQ
   - 6.3 Impediments to progress and actions required to overcome them
   - 6.4 Early warning on potential delays and what can be done to avoid the delay or mitigate the effects
   - 6.5 Details of extensions of time and current completion date
   - 6.6 Review current programme and the need for a revised programme
   - 6.7 Review construction operations to be undertaken in the short to medium term
   - 6.8 Discuss any anticipated problems and actions to mitigate
   - 6.9 Record any information required by the Contractor from the Engineer
   - 6.10 Record any information required by the Engineer from the Contractor
7. Materials and Quality Control
   - 7.1 Review of materials resourcing
   - 7.2 Difficulties experienced in sourcing materials and achieving required quality
   - 7.3 Actions required for mitigation of difficulties
   - 7.4 Comments on the general standard of workmanship and materials and any disagreement with the Contractor on this matter.
   - 7.5 Details of any sub-standard work, the Contractor's proposals for making good and progress of work in hand.
   - 7.6 Discuss/clarify, any queries on the Specification, Materials and Testing.
8. Finance
   - 8.1 Review of latest cash flow forecast and estimated final cost
   - 8.3 Discuss possible measure to reduce any cost over-runs
   - 8.4 Confirmation or discussion on or issuing variation orders
   - 8.5 Review current situation on measurement and processing payment certificates
9. Claims
   - 9.1 Review current status of claims and disputes, including action required to expedite settlement
10. Technical Matters
    - 10.1 Review any problems or decisions of a technical nature which need to be recorded as "issues". The actual resolution of such items should generally be programmed for separate consideration.

11. Safety

    11.1 Record any incidents that have occurred since the previous meeting
    11.2 Comment on any situations that do not have full regard for the safety of all Persons entitled to be on site or for the safety and convenience of the public or others.
    11.3 Traffic Accommodation

12. Environment

    12.1 Actions taken/required
    12.2 Environmental Progress
    12.3 HIV/AIDS Awareness and Prevention Campaigns
    12.4 Social Monitoring
    12.5 Local Liaison Committee
    12.6 Right of Way

13. Any Other Business

14 Date of Next Meeting

Appendix 7-16 - Guideline CA8 Monthly Progress Reports

GUIDELINE N° CA8

Ethiopian Roads Authority

Guideline N° CA8

Monthly Progress Reports

Contract Administration Manual

November 2006

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
ETHIOPIAN ROADS AUTHORITY
CONTRACT ADMINISTRATION DIVISION

MONTHLY PROGRESS REPORTS

December 1999
Rev November 2006

INTRODUCTION

This guideline outlines a suggested framework and content for consultant's monthly progress reports for construction work. Typical forms have been prepared which illustrate how the information should be presented.

MONTHLY PROGRESS FOR WORKS CONTRACTS
FRAMEWORK AND CONTENT

1.0 PROJECT INFORMATION
- 1.1 Description of the Project
- 1.2 Location Map
- 1.3 Typical Cross Sections
- 1.4 Basic Contract Data

2.0 CONTRACTUAL MATTERS
- 2.1 Bonds (Guarantees) and Insurances
- 2.2 Removal of Obstructions
- 2.3 Possession of Site
- 2.4 Summary of Claims

3.0 MOBILIZATION
- 3.1 Site Establishment
- 3.2 Contractors Plant and Equipment
- 3.3 Materials
- 3.4 Contractors Staff Mobilization

4.0 WORKS (PERFORMANCE) PROGRAMME
- 4.1 Current Status
- 4.2 Monthly Work Programme

5.0 MATERIALS REPORT
- 5.1 General
- 5.2 Quarries and Borrow Pits
- 5.3 Testing of Materials
- 5.4 Materials on Site

6.0 PROGRESS OF THE WORKS
- 6.1 Narrative Report
- 6.2 Progress by Category
- 6.3 Sub-Contracts
- 6.4 Problems/Solutions and Action Taken
- 6.5 Progress Straight Line Diagram (see example attached)
- 6.6 Progress Bar Chart with 'S' curve (see example attached)
- 6.7 Key Rates of Construction Table (see example attached)

7.0 SUPERVISION AND MONITORING
- 7.1 Narrative Report
- 7.2 Staffing Matters
- 7.3 Survey Work
- 7.4 Design and Specification Modifications
- 7.5 Site Meetings
- 7.6 Site Visits
- 7.7 Key Correspondence

8.0 FINANCIAL REPORT
- 8.1 Financial Statement
- 8.2 Variations
- 8.3 Payments Made
- 8.4 Cash Flow

9.0 METEOROLOGICAL REPORT
- 9.1 Narrative Report
- 9.2 Monthly Rainfall
- 9.3 Rainfall to Date

10.0 ENVIRONMENTAL REPORT
- 10.1 Implementation of the Environmental Management Plan
- 10.2 Implementation of HIV/AIDS Awareness and Prevention Campaigns
- 10.3 Social Issues including employment conditions, labour standards and gender issues
- 10.4 Local authority and community liaison
- 10.5 Traffic Management
- 10.6 Safety

11.0 APPENDICES
- 11.1 CONTRACTOR'S PERSONNEL
- 11.2 STATUS OF CONSTRUCTION EQUIPMENT
- 11.3 CONSULTANTS PERSONNEL
- 11.4 MINUTES OF MEETINGS
- 11.5 ERA/RSDP STATUS REPORT
- 11.6 ACCIDENT RECORD

12.0 PHOTOGRAPHS

MONTHLY PROGRESS REPORTS FOR WORKS CONTRACTS

The following provides guidance on the information which should be included under each of the headings

1.0 PROJECT INFORMATION

1.1 Description of the Project

Provide a general and brief (single A4) description of the project including:-

(i) Location (Administrative Region(s))
(ii) Length of the project
(iii) The route
(iv) The topography
(v) Brief description of the work to be executed
(vi) Normal climatic conditions to be expected.

1.2 Location Map

Provide A4 size map (in colour if possible) showing the route of the project; the major towns along the route and the location of construction camps, asphalt plants and crushers (with stations)

1.3 Typical Cross Sections

Provide typical cross sections for rural and urban areas (town sections)

1.4 Basic Contract Data

Works Contracts

Funding
Credit Agreement No./Project No.
ERA Contract No.
Employer/Contracting Authority
Contractor
Engineer/Supervisor
Engineer/Supervisors Representative
Notification of Award
Date of Contract Signature
Commencement Date
Type of Contract (e.g. measurement or lump sum etc.)
Original Contract Price
Value of Variations
Revised Total Contract Amount
Contract Length (original and final)
Currencies and Proportions of Payment
Minimum Value of Payment Certificate
Contractual Exchange Rate(s) (incld US $ equivalent for WB projects)
Liquidated Damages
Original Time for Completion
Original Completion Date
Extensions of Time
Current Completion Date
Minimum Length for Provisional Acceptance
Maintenance Period

Supervision Contracts

Funding
Original Contract Price
Variations
Revised Total Contract Amount
Currencies and Proportion of Payment
Contractual Exchange Rates

2.0 CONTRACTUAL MATTERS

2.1 Bonds (Guarantees) and Insurances

Provide details of bonds (guarantees) and insurances required and provided, including amounts, dates provided, and expiry dates.

2.2 Removal of Obstructions

Provide information regarding the portions of the site along which obstructions have been identified, the date of submission of this information to ERA, the action to be taken by the responsible parties and progress on the removal of obstructions to date.

2.3 Possession of Site

Provide information regarding portion(s) of the site the Contractor has requested possession of, date(s) requested and date(s) handed over.

2.4 Summary of Claims

Provide a summary of any claims for additional costs or extensions of time including dates of submission and action taken.

3.0 MOBILIZATION

3.1 Site Establishment

Summarize the position regarding the provision of facilities (offices, laboratory, residential accommodation, laboratory, survey and communication equipment, site vehicles) etc. for both the Contractor and the Engineer/Supervisor.

3.2 Contractors Plant and Equipment

Summarize the position regarding the provision of the principal items of construction plant and equipment by the Contractor to the site.

3.3 Materials

Summarize the position regarding the provision of the principal construction materials by the Contractor to the site.

3.4 Contractors Staff Mobilization

Provide information regarding the Contractors personnel mobilized to date and impending arrivals.

4.0 WORKS (PERFORMANCE) PROGRAMME

4.1 Current Status

Provide a summary of the situation regarding the submission and approval (consent) of the Contractors Work (Performance) Programme(s) including:-

(i) Contractual date for submission
(ii) Actual date of submission
(iii) Date of approval (consent)
(iv) Status of approval (consent) i.e. qualified/unqualified.
(v) Revised programmes requested/submitted including date(s) and reason for revision.

4.2 Monthly Work Programme

State if monthly work programmes are a contractual requirement and whether submitted or not.

5.0 MATERIALS REPORT

5.1 General

Provide a general report summarizing the position regarding the provision, approval and testing of construction materials on the site, including:-

(i) Principal materials required, with total quantities and sources
(ii) Whether testing is being carried out independently or jointly
(iii) Status of approval of materials (with approval dates) including asphalt and concrete mixes.

5.2 Quarries and Borrow Pits

Provide a list of approved quarries and borrow pits and a description of the materials to be obtained from them, including the method of processing.

5.3 Testing of Materials

Provide a summary of the tests carried out during the report period including:-

(i) The number of tests carried out on each material and numbers satisfactory/failed
(ii) The highest, lowest and average test result values together with the specified requirement for each material (where appropriate)
(iii) Summary of the test results for the tests referred to in ii above, in tabular form.

5.4 Materials on Site

Provide information regarding quantities of materials on site and state whether quantities are adequate or not in accordance with the work/performance programme.

6.0 PROGRESS OF THE WORKS

6.1 Narrative Report

Provide a narrative report describing the Contractors activities during the report period and giving the overall position regarding the progress of the Works (achieved/programmed), and comment on any factors which may have adversely affected it.

6.2 Progress by Category

Describe the actual progress made on each of the major activities relative to the programmed achievement and give reasons for any slippage or improvement. e.g.

(i) Site Clearance
(ii) Drainage
(iii) Structures
(iv) Earthworks (including capping layer)
(v) Sub-base
(vi) Road base (base course)
(vii) Asphalt Layers
(viii) Road Furniture and Markings

6.3 Sub-Contracts

Provide details of approved sub-contracts.

6.4 Problems/Solutions and Action Taken

Describe any problems/difficulties which are adversely affecting the progress of the works, identify the causes/solutions and state the action taken/proposed to resolve those problems.

6.5 Progress Straight Line Diagram (see example attached)
6.6 Progress Bar Chart with 'S' curve (see example attached)
6.7 Key Rates of Construction Table (see example attached)

7.0 SUPERVISION AND MONITORING

7.1 Narrative Report

Provide a narrative report describing the principal activities undertaken by the Consultant during the report period.

7.2 Staffing Matters

Provide a list of personnel with positions held and dates mobilized/de-mobilized indicating whether present on site or not, together with information regarding absences (on leave etc) and any other relevant information.

7.3 Survey Work

A brief narrative report of the survey work undertaken during the report period and any problems/difficulties that may have been encountered.

7.4 Design and Specification Modifications

Describe any recommended/approved changes to the design or the technical specifications which may have become necessary including the reason for the change.

7.5 Site Meetings

Provide a record of the site meetings (including Monthly Progress Meetings) that have taken place during the report period.

7.6 Site Visits

Provide a record of any "official" organised or arranged visits to the site that have been made during the report period e.g. by the Employer/Contracting Authority and other parties.

7.7 Key Correspondence

Provide copies of key correspondence

8.0 FINANCIAL REPORT

8.1 Financial Statement

Provide a brief statement indicating the overall financial position of both the Works and the supervision contracts including the following:-

Works Contract

(i) Details and amount of advance payments
(ii) The value of work completed to date
(iii) Total value of variations to date
(iv) Amount of advance repayments
(v) Amount of retention held
(vi) Total amount of interim payments certified/made
(vii) The estimated cost to completion (revised at 3 monthly intervals)

Supervision Contract

(i) Details and amount of advance payments
(ii) Total value of variations to date
(iii) Amount of advance repayments
(iv) Value of services provided to date
(v) The estimated cost to completion (revised at 6 monthly intervals)

8.2 Variations

Provide details and amounts of variations issued to date

8.3 Payments Made

Summarize all payments made in tabular and bar chart form giving dates of receipt of application, payment due, payment certified, and payment made etc.

(i) To the Contractor (see example attached)

(ii) To the Supervision Consultant

8.4 Cash Flow

Provide the projected and actual cash flow figures in both tabular and graphical (see example attached) form.

9.0 METEOROLOGICAL REPORT

9.1 Narrative Report

Provide a narrative report describing the prevailing weather conditions during the report period and indicate any exceptional/unusual features

9.2 Monthly Rainfall

Provide a record of the measured rainfall in millimetres per day during the report period. (See example attached)

9.3 Rainfall to Date

Provide a chart showing the total rainfall for each month since the commencement of the works together with the average monthly rainfall for the past 5 years (if data available). (See example attached)

10.0 ENVIRONMENTAL REPORT

Provide complete details of the Contractor's environmental, social, HIV/AIDS, local community liaison, safety and traffic management plans and the implementation thereof.

10.1 Environmental Management Plan
10.2 HIV/AIDS Awareness and Prevention Campaigns
10.3 Social Issues including employment conditions, labour standards and gender issues
10.4 Local authority and community liaison
10.5 Traffic Management
10.6 Safety

11.0 APPENDICES

11.1 CONTRACTOR'S PERSONNEL

(i) Site Organization Chart (showing positions of key personnel)

(ii) Personnel Bar Chart (indicating leave and periods employed on project)

11.2 STATUS OF CONSTRUCTION EQUIPMENT

(i) On site /Operational/ Non-operational (see example attached)

11.3 CONSULTANTS PERSONNEL

(i) Site Organization Chart

(ii) Personnel Bar Chart (indicating leave and periods employed on project) (see example attached)

(iii) Personnel Attendance Record (see example attached)

11.4 MINUTES OF MEETINGS

11.5 ERA/RSDP STATUS REPORT (see example attached)

11.6 ACCIDENT RECORD (see example attached)

12.0 PHOTOGRAPHS

Provide 4 to 8 photographs illustrating major activities or events during report period.

Fig. 1.4 CONTRACT BASE DATA

Contract Title:				
Employer/Contracting Authority				
Employers Contract No.				
Notification of Contract Award:			Date of Contract Signature:	
Type of Contract/1:				
Contract Length:				
Contract Funded by:	i)		Foreign Cost %:	Local Cost %:
	ii)		Foreign Cost %:	Local Cost %:
Credit Agreement No.:				
Contractor:				
Sub-Contractors if any:				
Percent and Extent of Subcontracted Works:				
Engineer/Supervisor:				
Engineer's/Supervisor's Representative:				
Original Total Contract Sum:	ETB		Equivalent US$ value:	@ETBirr/US$
Value of Variation Orders to date:	ETB		Equivalent US$ value:	@ETBirr/US$
Value of Claims approved to date:	ETB		Equivalent US$ value:	@ETBirr/US$
Total Price Adjustment to date/2:	ETB		Equivalent US$ value:	@ETBirr/US$
Interest on Late Payment to date:	ETB		Equivalent US$ value:	@ETBirr/US$
Contingencies to completion/3:	ETB		Equivalent US$ value:	@ETBirr/US$
Estimated Final Contract Sum:	ETB		Equivalent US$ value:	@ETBirr/US$
Total Funds Available:	ETB		Equivalent US$ value:	@ETBirr/US$
Estimated Uncommitted Funds:	ETB		Equivalent US$ value:	@ETBirr/US$
Percent Payable in Foreign Currency:			Percent Payable in Local Currency:	
Currencies specified for Payment:	i)		Foreign Cost%:	@ETB/
	ii)		Foreign Cost%:	@ETB/
	iii)		Foreign Cost%:	@ETB/
Pay Period before Interest Charges apply:		days	Interest Rate %:	
Maximum Period allowed for Payment:		days	Minimum Value of Payment Certificate:	
Amount and Type of Performance Security:				
Amount and Type of Advance Payment Guarantee:				
Amount of Liquidated Damages per day:				
Limit of Liquidated Damages:				
Time for Completion:			Date of Notice to Commence:	
Original Contract Substantial Completion Date:			Extensions of Time to date:	
Current Contract Substantial Completion Date:			Maintenance Period:	
Minimum Length for Handover of Sections:				
Construction Programme Revisions to Date:		No.	Date	Justification

1/ Specify: Design and Construction, Construction only, ICB, LCB or negotiated contract; payable on the basis of lump sum, lump sum per km, schedule of rates/measured works, cost plus.

2/ Adjustments for Escalation.

3/ Details of future additional cost provisions to be itemised overleaf.

Fig. 6.5 Progress Straight Line Diagram

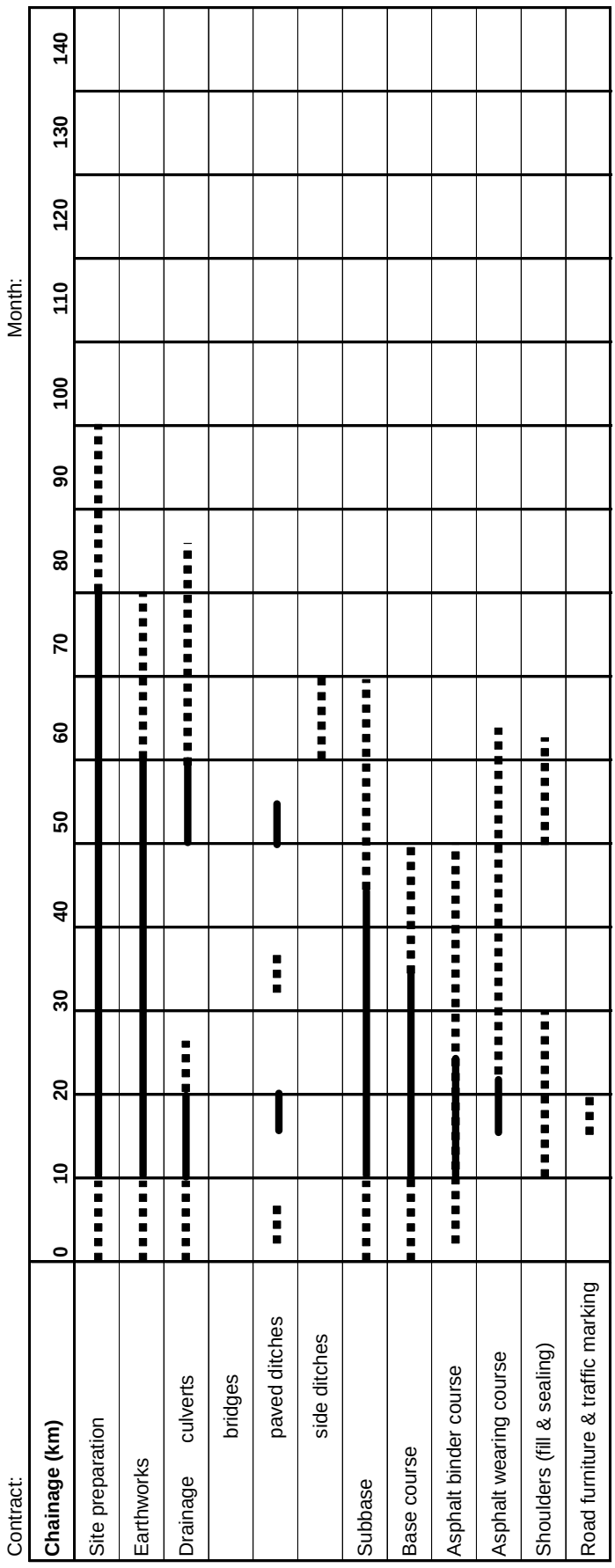


Fig. 6.6 Construction Progress with 'S' Curve

Contract: Month:

Contractor	
Time for Completion	40 Months
Date commenced	15-Oct-97
Original completion date	15-Oct-00
Revised completion date	14-Feb-01

REPORT BY CATEGORY

(REVISED SCHEDULE)

MONTHLY REPORT AS AT	
CONTRACT BID AMOUNT	310,979,872.92
AMOUNT OF VARIATION ORDERS	30,722,063.96
CURRENT FINAL ESTIMATED COST	341,701,936.88

Item	Description	Amount	%wt	% Accomp.	ST
					AT
					US
					P
A	GENERAL	14,784,667.52	4.33	3.26	
					A
					P
B	SITE PREPARATION	20,003,607.10	5.58	2	
					A
					P
C	EARTHWORKS	15,062,187.50	4.41	4.41	
					A
					P
D	DRAINAGE & SLOPE	26,343,467.69	7.71	1.05	
	PROTECTION WORKS				A
					P
E	ROAD BASE	82,504.281.00	24.15	5.46	
	CONSTRUCTION				A
					P
F	BITUMINOUS	172,839,458.13	50.58	10.24	
	PAVEMENT				A
					P
G	ROAD FURNITURE	4,062,242.99	11.9	0.00	
					A
					P
H	TRAFFIC MEASURES	6,102,046.35	17.9	0.47	
					A
	T O T A L	341,701,936.88	100%	23.66	

					1997				1998																1999												2000												2001					
					S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	
							10.9	21.8	32.7	43.5	54.4	65.3	66.6	67.3	68.0	66.8	09.3	72.7	73.3	74.0	74.6	75.3	76.0	77.3	77.9	78.6	81.6	84.7	87.7	90.7	91.4	92.1	92.7	93.4	94.0	94.7	95.4	96.0	95.4	96.0	96.7	97.4	96.0	96.7	99.3	100					
							4.9	15.3	25.1	38.6	41.8	47.3	54.1	59.1	62.8	64.1	66.0	66.6	70.0	70.3	7.3	72.5	73.3	74.0	74.6	75.3																										
												2.3	6.9	11.5	12.4	13.3	14.2	18.8	23.4	28.0	32.6	37.2	41.7	46.3	50.9	56.5	56.4	57.3	58.3	62.8	67.4	72.0	76.6	81.2	85.8	90.4	95.0	99.5	100	100	100	100	100	100	100	100					
													0.5	1.2	1.5	1.5	2.1	3.1	5.8	12.3	17.3	20.1	28.8	29.3	31.3	34.1																										
												1.9	5.8	9.7	10.5	11.2	12.0	15.9	19.8	23.8	27.5	31.4	35.3	39.1	43.0	46.9	47.7	48.4	49.2	53.1	57.0	80.9	64.7	68.8	72.5	76.4	80.2	84.1	84.9	85.1	80.4	90.3	94.2	96.1	100	100					
													1.2	2.9	3.2	3.3	5.1	8.7	9.0	9.0	9.6	10.8	14.6	20.7	22.2	26.9																										
												0.5	1.4	2.3	3.2	4.1	5.0	5.9	6.9	7.8	11.4	15.1	18.8	22.4	28.1	29.7	30.5	31.2	31.9	'39.2	48.6	53.9	61.2	66.5	75.8	79.5	63.2	66.8	87.6	88.3	89.0	92.7	96.3	100	100	100					
													0.1	0.5	1.4	2.8	3.6	4.4	5.0	5.6	6.4	8.2	10.4	11.8	13.6																										
																	2.1	6.4	10.4	14.8	19.1	23.3	27.5	31.8	36.0	37.5	39.0	40.5	44.7	48.9	53.2	57.4	6.5	65.9	70.1	74.4	78.8	81.8	83.1	84.2	87.3	91.5	95.8	100	100					
														0.7	2.4	3.8	4.3	4.9	8.7	9.7	11.8	14.4	16.5	20.2	22.6																										
																		2.1	6.3	10.4	14.6	18.8	22.9	27.1	31.3	33.3	35.4	37.5	41.7	45.8	50.0	54.2	58.3	62.5	'66.7	70.8	75.0	77.1	79.2	81.3	85.4	89.8	93.8	92.9	100					
																		0.2	0.9	1.3	3.8	7.1	10.1	12.4	16.3	20.3																										
																							4.9	9.8	14.6	19.5	22.0	24.4	26.8	31.7	36.6	41.5	46.3	51.2	56.1	61.0	65.9	70.7	73.2	75.6	78.0	82.9	87.8	92.7	97.8	100					
																									0.1	0.1																										
													3.8	7.8	8.4	9.1	9.9	13.7	17.5	21.3	25.1	28.9	32.7	36.5	40.3	44.1	44.9	45.6	46.4	50.2	54.0	57.8	61.6	65.4	69.2	73.0	76.8	80.6	81.4	82.1	82.9	66.7	90.5	94.3	96.1	100					
													0.3	0.6	0.6	1.1	1.1	3.8	6.8	15.1	18.9	20.8	22.0	28.0	26.4	26.4																										
	PROGRAMMED			MONTHLY			0.5	0.5	0.5	0.5	0.5	0.7	0.6	0.2	0.2	0.2	1.1	2.8	3.7	3.9	3.9	3.9	4.0	4.0	4.0	4.0	1.6	1.6	1.7	4.4	4.4	4.4	4.3	4.3	4.3	4.0	4.0	4.0	1.6	1.6	1.6	3.7	3.7	3.7	3.4	1.1					
	ACCOMPLISHMENT			CUMULAT		0.00	0.5	0.9	1.4	1.9	2.4	2.4	3.1	3.7	4.3	4.5	4.7	4.9	6.0	8.8	12.6	16.5	20.4	24.5	28.5	32.5	36.5	39.7	41.5	45.9	50.2	54.6	56.9	63.2	67.5	71.5	75.5	79.5	81.1	82.7	84.3	88.0	91.7	95.5	98.9	100					
	ACTUAL			MONTHLY			0.2	0.4	0.4	0.0	0.1	0.2	0.4	0.3	0.4	0.5	0.0	0.6	0.9	1.2	2.4	2.6	2.9	2.3	3.2	3.1																										
	ACCOMPLISHMENT			CUMULAT		0.00	0.2	0.7	1.1	1.7	1.8	2.0	2.4	2.8	3.2	3.7	4.3	4.8	5.0	7.1	9.5	12.1	15.0	17.3	20.5	23.7																										
	SLIPAGE			(+)																																															
				(-)			0.3	0.3	0.3	0.2	0.5	1.0	1.3	1.5	1.3	1.0	0.5	1.1	3.0	5.5	7.0	8.3	9.5	11.2	11.9	12.8																										

Fig. 6.7 Key Rates of Construction Table

Contract: Month:

BoQ Item No. 1/	Description	Unit of Measu-rement	Estimated Total Quantity	Planned Product. Period (months)	Planned Average Monthly Product.	Total Product. to date	Product. Period to date (months)	Average Monthly Product. to date	Remaining Production Period (months)	Monthly Production now needed to complete	Product. this month	Product. Previous month	Remarks (Significance of figures, causes of production variations & action taken to remedy etc.
2.9	Roadbed preparation on existing surface in fill section	m³	322,000	24	13,417	4,883	11	444	13	24,394	0	574	Contractor concentrating efforts on particular section.
2.14	Roadbed preparation on existing road surface, average 200mm deep milling	m²	500,000	10	50,000	491,852	9	54,650	1		50,329	31,924	Work item is complete
3.2/3.3	Soils excavation	m³	107,400	32	3,356	73,116	14	5,223	18	1,905	16,548	4,116	
3.6	Fill for existing road reconstruction	m³	545,500	31	17,597	48,293	13	3,715	18	27,623	9,096	4,714	} Contractor concentrating efforts
4.4	Construction of unpaved ditches	m	345,000	26	13,269	615	8	77	18	19,133	0	0	} on particular section
4.8	Construction of paved ditches in town sections	m	55,000	29	1,916	8,000	14	571	15	3,170	500	135	
4.12	Construction of corrugated metal pipe culverts	m	4,350	24	181	671	13	52	11	334	67	0	
5.1	Construction of subbase	m³	567,000	28	20,250	151,479	10	15,148	18	23,085	22,450	25,550	
5.2	Construction of base course	m³	535,000	28	19,129	115,243	9	12,805	19	22,124	18,752	19,622	
6.9	Asphalt for binder course	m³	130,460	25	5,218	33,225	8	4,153	17	5,720	6,500	6,644	
6.11	Asphalt wearing course	m³	96,115	25	3,845	15,950	7	2,279	18	4,454	3,661	2,840	
6.13	Sealing of shoulders	m²	809,000	28	28,893	750	5	150	23	35,141	750	0	Only trials have been executed
7.8	Road marking	m²	83,000	11	7,545	0	4		7	11,857	0	0	No suitable equipment available.
8.1	Traffic diversions	km	265	33	8	68	14	4.9	19	10	6	9	

Notes: 1/ Insert all critical path production items; including production of crushed or screened products etc.

Fig. 8.3 Payments to Contractor

Contract: Month:

PAYMENT APPLICATION			Certificate	Interest	Payment	Certificate	FOREIGN COST ELEMENT				LOCAL COST ELEMENT				REMARKS/ACTION
No.	Description	Monthly statement submission date	Issue Date /1	Applicable Date /2	Default Date /3	Payment Value (Birr)	Payment Value (e.g. US Dollars)	Payment Date /4	Payment Period	Time to date /5	Payment Value (Birr)	Payment Date /3	Payment Period	Time to date /4	REQUIRED (re late payment default etc)
1A	Advance	17-Oct-97	17-Oct-97	25-Jan-98	25-May-98	21,778,648.43	2,675,722.28	05-Dec-97	49 days		-	-	-	-	
1B	Advance	17-Oct-97	17-Oct-97	25-Jan-98	25-May-98	9,419,338.86	-	-	-		9,419,338.86	05-Nov-97	19 days		
5C/A	Advance	13-Feb-98	16-Feb-98	17-May-98	14-Sep-98	27,033,258.07	3,336,623.65	23-May-98	96 days		-	-	-		
6C/A	Advance	14-Apr-98	16-Apr-98	15-Jul-98	12-Oct-98	35,162,716.50	4,340,015.22	30-Jun-98	77 days		-	-	-		
7A	1/05-31/05	12-Jun-98	23-Jun-98	21-Sep-98	19-Jan-99	2,620,788.24	323,476.27	23-Aug-98	61 days		-	-	-		
7B	1/05-31/05	12-Jun-98	23-Jun-98	21-Sep-98	19-Jan-99	761,575.77	-	-	-		761,565.77	25-Jul-98	32 days		
8A	1/06-30/06	04-Aug-98	05-Aug-98	04-Nov-98	04-Mar-99	517,272.57	-	-	-		517,272.57	03-Sep-98	29 days		
8B	1/06-30/06	04-Aug-98	05-Aug-98	04-Mar-99	04-May-99	405,755.93	-	-	-		405,755.93	03-Sep-98	29 days		
9A	1/07-31/07	20-Aug-98	20-Aug-98	20-Nov-98	20-May-99	2,477,841.70	-	-	-		2,477,841.70	25-Sep-98	36 days		
9B	1/07-31/07	20-Aug-98	20-Aug-98	20-Nov-98	20-Mar-99	944,152.36	-	-	-		944,152.36	25-Sep-98	36 days		
10A	1/08-31/08	02-Sep-98	03-Sep-98	02-Dec-98	01-Apr-99	2,182,066.46	-	-	-		2,182,066.46	14-Oct-98	41 days		
10B	1/08-31/08	02-Sep-98	03-Sep-98	02-Dec-98	01-Apr-99	938.070.44	-	-	-		938,070.44	14-Oct-98	41 days		
11A	1/09-30/09	20-Oct-98	27-Oct-98	25-Jan-99	25-May-99	5,526,292.74	-	-	-		5,526,292.74	19-Dec-98	53 days		
11B	1/09-30/09	20-Oct-98	27-Oct-98	25-Jan-99	25-May-99	2,401,253.87	-	-	-		2,401,253.87	19-Dec-98	53 days		
12A	1/10-31/10	27-Nov-98	27-Oct-98	25-Feb-99	25-Jun-99	1,377,286.49	169,993.82	23-Feb-99	88 days		-	-	-		
12B	1/10-31/10	27-Nov-98	27-Oct-98	25-Feb-99	25-Jun-99	598,450.84	-	-	-		598,450.84	08-Feb-99	73 days		
13A	1/11-30/11	12-Dec-98	12-Dec-98	12-Mar-99	10-Jul-99	1,803,289.87	222,573.97	23-Feb-99	73 days		-	-	-		
13B	1/11-30/11	12-Dec-98	12-Dec-98	12-Mar-99	10-Jul-99	783,555.44	-	-	-		783,555.44	08-Feb-99	58 days		
14A	1/1`2-30/12	12-Jan-99	15-Jan-99	15-Apr-99	13-Aug-99	4,591,882.63	566,760.55	20-Apr-99	95 days		-	-	-		
14B	1/12-30/12	12-Jan-99	15-Jan-99	15-Apr-99	13-Aug-99	1,995,239.20	-	-	-		1,995,239.20	23-Mar-99	67 days		
15A	1/01-31/01	12-Feb-99	17-Feb-99	18-May-99	15-Sep-99	3,944,067.65	-	-	-		3,944,067.65	13-Apr-99	55 days		
15B	1/01-31/01	12-Feb-99	17-Feb-99	18-May-99	15-Sep-99	1,713,754.25	-	-	-		1,713,754.25	13-Apr-99	55 days		
16A	1/02-28/02	22-Mar-99	22-Mar-99	20-Jun-99	18-Oct-99	6,151,979.55	759,318.04	08-Jun-99	78 days		-	-	-		
16B	1/02-28/02	22-Mar-99	22-Mar-99	20-Jun-99	18-Oct-99	2,673,123.81	-	-	-		2,673,123.81	14-May-99	53 days		Certificate 17 issued late -
17	1/03-31/03	26-Apr-99	20-May-99	18-Aug-99	16-Dec-99	9,153,975.62	-	-	-		9,153,975.62	18-Jun-99	29 days		awaiting revised retention guarantee
18	1/04-30/04	21-May-99	21-May-99	19-Aug-99	17-Dec-99	7,180,432.38	-	-	-		7,180,432.38	18-Jun-99	28 days		
19	1/05-31/05	11-Jun-99	11-Jun-99	09-Sep-99	07-Jan-00	10,421,016.91	896,631.55			19 days	3,156,526.02	18-Jun-99	7 days		
TOTAL PAYMENTS DUE TO DATE					Birr	157,192,605.69	100,419,859.78				56,772,745.91				
OUTSTANDING PAYMENTS					Birr	7,264,490.89	7,264,490.89				0.00				

1/ Date on which payment certificate was delivered to Employer by Engineer.

2/ Date interest charges are activated for late payment: i.e. --- days after submission of monthly statement to Engineer or as stated in contract docume...

3/ Date Employer in Default of Contract for non-payment: i.e. --- days after expiry of the period under note no. 2.

} different for EDF contracts.

4/ Payment Date as reported by Contractor.

5/ Number of days to date awaiting payment.

Fig. 8.3A Contractor's Payment Period Bar Chart

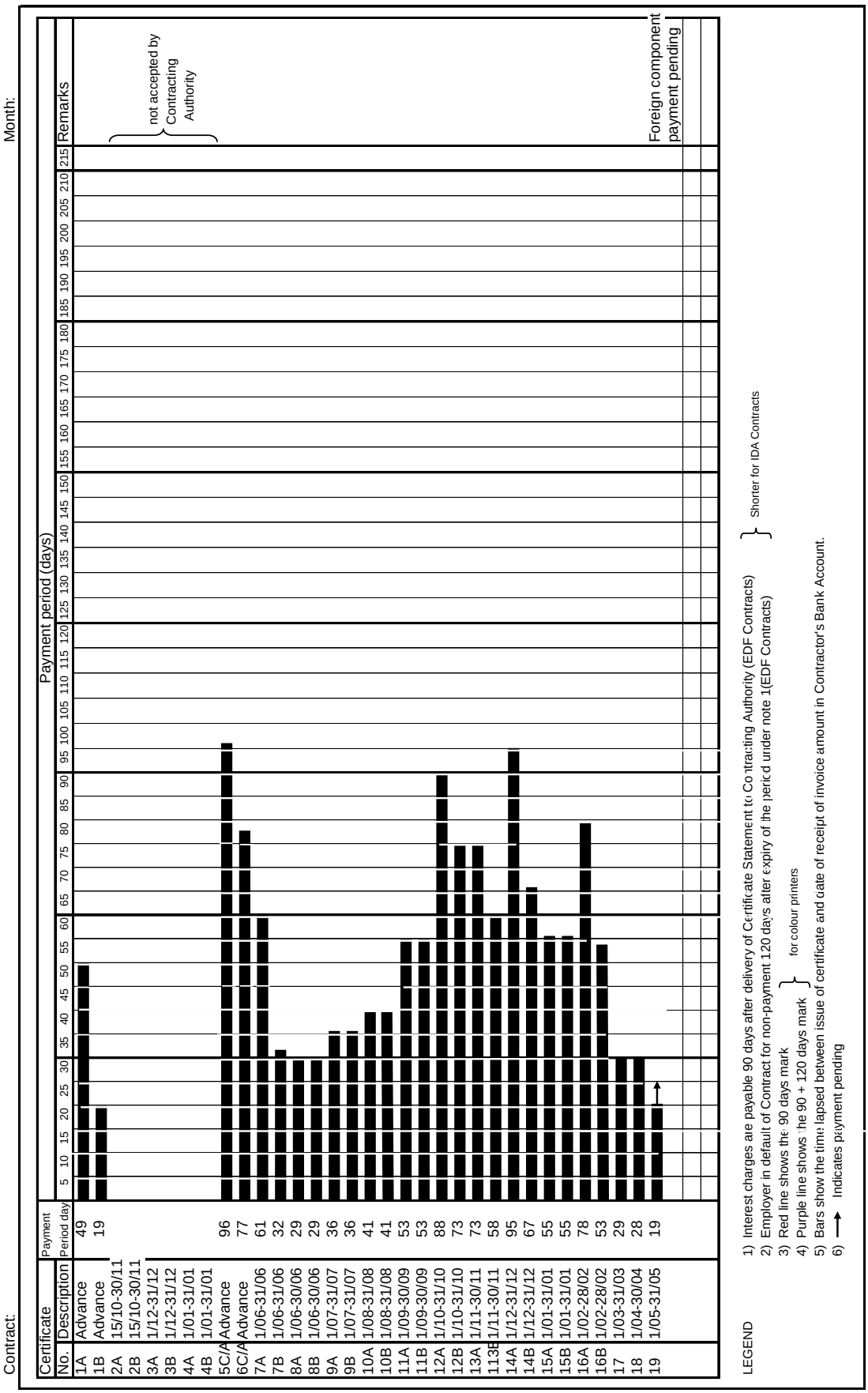
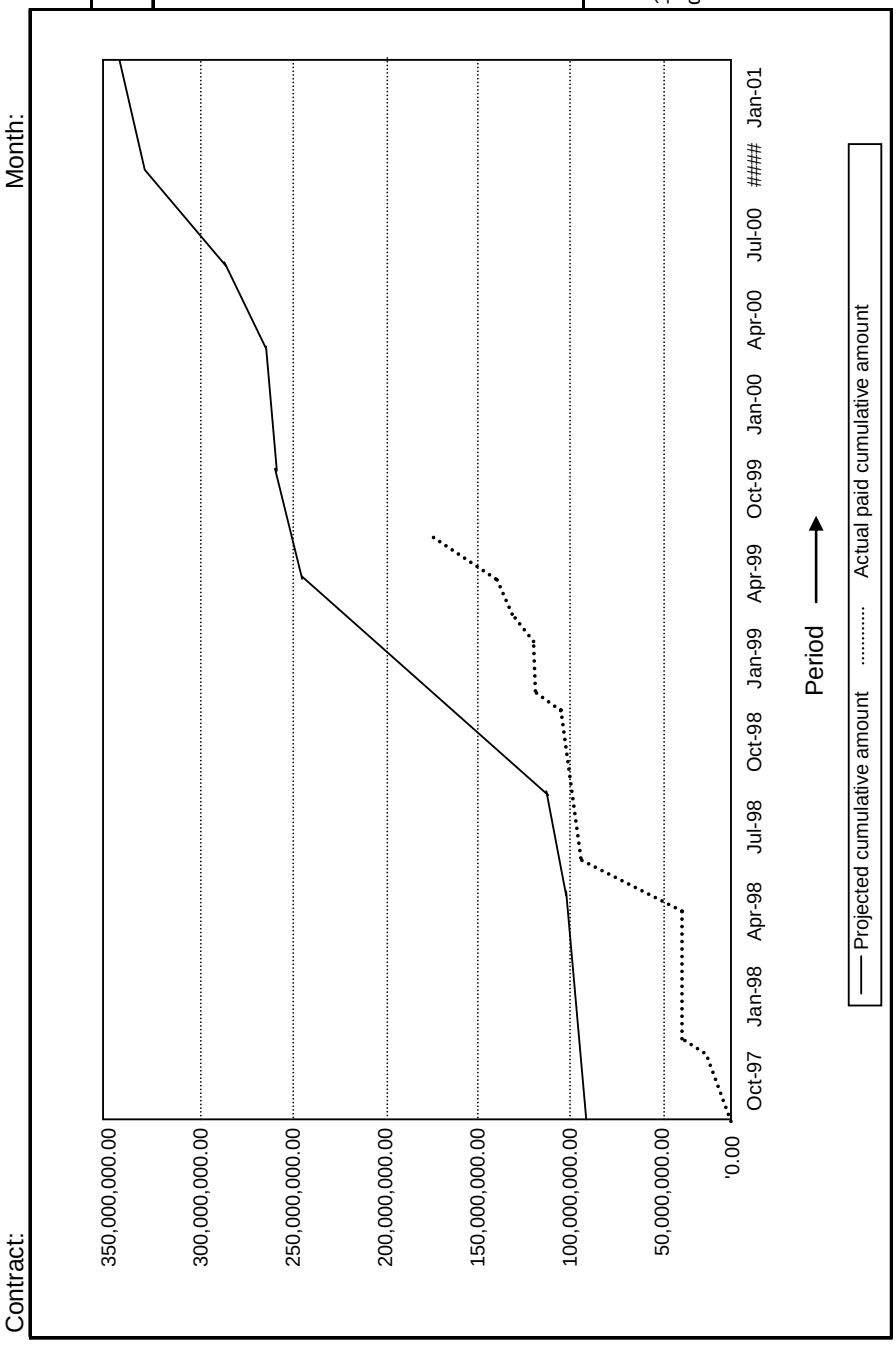


Fig. 8.4 Projected and Actual Cash Flow



Period End /1	Projected (Millions)	Actual (Millions)
97/4	93.5	31.1
98/1	98.4	31.1
98/2	102	93.3
98/3	114.4	101
98/4	155.6	112.1
99/1	201.1	118.6
99/2	246.5	157.2
99/3	264.1	
99/4	267.2	
00/1	271.7	
00/2	293.2	
00/3	327.5	
00/4	337.4	
01-Jan	341.7	

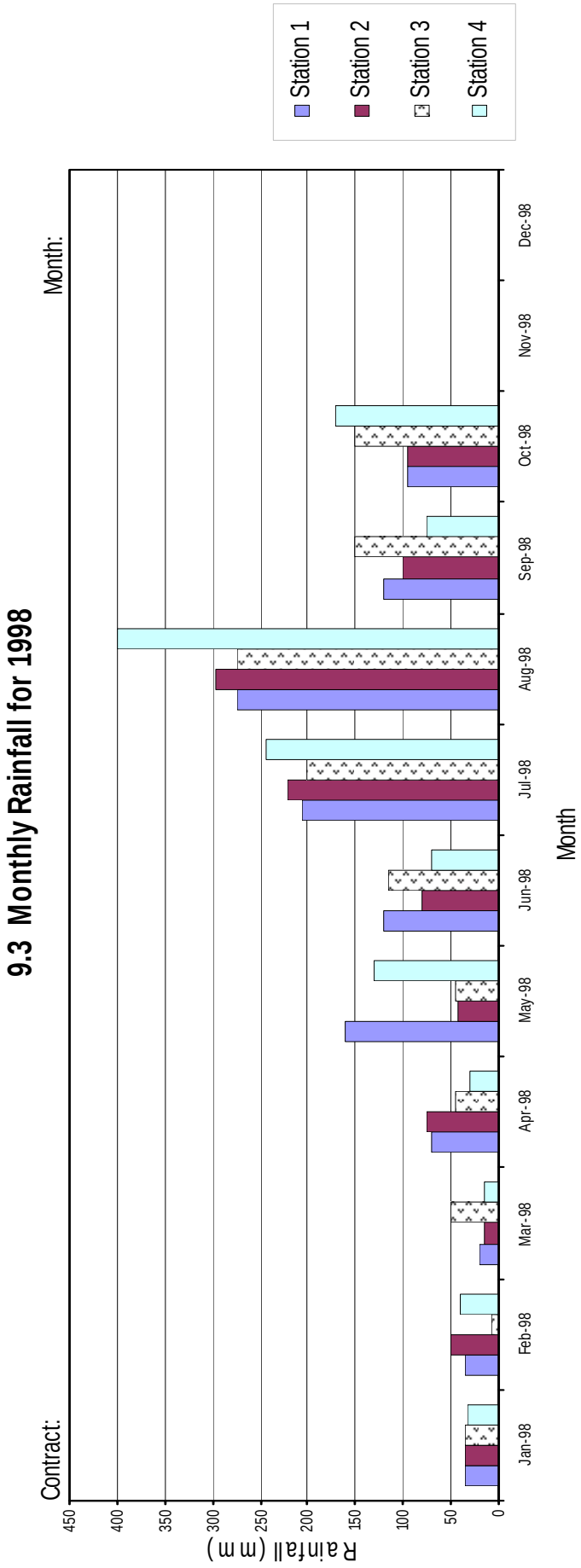
1. In this example Periods are quarters from
   - Oct - Jan
   - Jan - April
   - April - July
   - July - Oct

   due to start date in Oct 1997.

Fig. 9.2 Weather Record

Contract: **Month:**

Day	Station			Site Affected by Rain or Flood		Construction Activities Delayed and Quantitfied				Remarks
	1	2	3	From: km	To: km	Activity	Delay (hours)	Activity	Delay (hours)	
	Rainfall									
	(mm)	(mm)	(mm)							
1	18.5	0.8	0.0							
2	0.3	0.2	0.0							
3	1.7	5.7	0.0							
4	0.7	0.0	0.0							
5	0.0	0.0	0.0							
6	2	0.0	0.3							
7	0.0	0.0	0.0							
8	0.0	0.0	0.0							
9	0.0	0.0	0.0							
10	3.4	3.2	0.0							
11	0.0	0.0	0.0							
12	2.6	TR	0.0							
13	17.8	6.9	0.0							
14	11.6	25.6	0.0							
15	0.0	0.0	0.0							
16	0.0	0.0	0.0							
17	5.9	0.0	2.9							
18	0.6	0.0	0.0							
19	27	TR	0.0							
20	2	TR	0.0							
21	7.6	78	0.0							
22	1.6	0.0	0.0							
23	7.8	TR	0.0							
24	5.3	3.6	0.0							
25	0.4	TR	0.0							
26	2.9	1.6	0.0							
27	19.4	18.4	0.0							
28	18.6	18.1	6.8							
29	0.0	TR	0.0							
30	0.0	0.0	0.0							
31	-	-	0.0							
	157.7	162.1	10.0	TOTALS FOR THE MONTH						


9.3 Monthly Rainfall for 1998
Contract:
Month:
Station 1
Station 2
Station 3
Station 4
Rainfall (mm)
0
50
100
150
200
250
300
350
400
450
Jan-98
Feb-98
Mar-98
Apr-98
May-98
Jun-98
Jul-98
Aug-98
Sep-98
Oct-98
Nov-98
Dec-98
Month

Contract: Month:

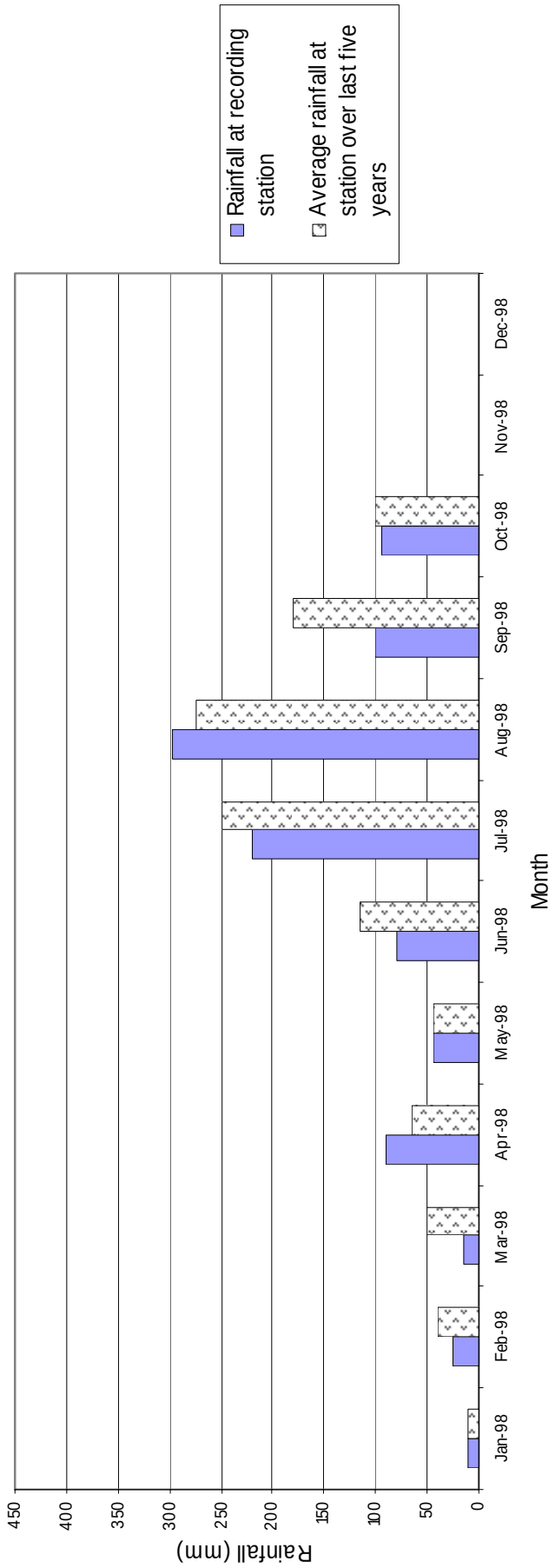


Fig. 9.3A Monthly Rainfall for Station 1 (etc.)

Fig. 10.1 Contractors Personnel

Contract: Month:

KEY PERSONNEL RECORD CHART

CONTRACTOR'S STAFF		1997										1998												1999												2000		
POSITION	NAMES	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	REMARKS
Project Director																																						
Contract Manager																																						
Quantity Surveyor																																						
Finance Administrator																																						
Site Manager (Agent)																																						
Customs Liaison																																						
Purchasing Manager																																						
Asst. Site Manager (Sub Agent)																																						
General Foreman																																						
Land Surveyor																																						
Plant Manager																																						
Crusher Plant Supervisor																																						
Bridge Supervisor																																						
Concrete Supervisor																																						
Earthworks Supervisor																																						
Camp Supervisor																																						
Road Supervisor																																						
Laboratory Supervisor																																						
Mechanics																																						
Asphalt Plant Electrician																																						
Asphalt Works supervisor																																						
Asphalt Plant operator																																						
Grader Operators																																						

Fig. 10.2 Status of Construction Equipment

Contract: Month:

Item no.	Description	Contract Fleet as proposed in Bid	Actual Fleet on site (No)	Availability in %		Broken Down and Maintenance in %	Remarks (Significance of figures, nothing major breakdowns and action taken to remedy etc.)
				Worked	Idle		
	Contractor owned Equipment						
1	CAT D6H Bulldozer	4	2	76	9	15	
2	CAT D7H Bulldozer	4					
3	CAT D8N Bulldozer	1					
4	CAT D9N Bulldozer		1	71	11	18	
5	CAT 950F Wheel loader	2					
6	CAD 966F Wheel loader	1	4	87	8	5	
7	CAD 988B Wheel loader		1	75	5	20	
8	JCB 3CX Excavator	1	2	85	3	12	
9	CAT 224B Excavator	2					
10	CAT 2250D Excavator	2					
11	CAT 245D Excavator	2	1	50	10	40	
12	O & K MH6 Excavator		3	80	4	16	
13	O & K RH20 Excavator		2	75	12	13	
14	CAT 12G Motorgrader	1					
15	CAT 14G Motorgrader	6	3	80	7	13	
16	CAT 16G Motorgrader	1	2	80	5	15	
17	ATLAS COPO RCC 748 HC, Drillrig	1	1	37	29	34	
18	FORD Tractor		3	42	53	5	
19	HAMM 2520D vibrating roller	5	4	68	19	13	
20	HAMM HD10 Tandem roller		1	31	63	6	
21	BOMAG BW161 Tandem roller	2	2	90	7	3	
22	BOMAG BW20R Tyre roller	2	2	90	7	3	
23	BOMAG BW65H Pedestr, Roller		2		98	2	
24	DEMAG SF-130P, Side paver	1	1	42	28	30	
25	VOGELE Super 1800, Paver finisher	2	2	80	17	3	
26	WIRTGEN SF 500C4, Road mill		1		100		
27	WIRTGEN WR 2500, Road mill		1	54	41	5	
28	HOFMANN RM 50H, Road marker		1		100		
29	STRUDILUXE Road brush		3	10	83	7	
30	IVECO, Mobile service truck	2	2	83	7	10	
31	IVECO, Fuel bowser	1	2	75	10	15	
32	IVECO, Tipper truck, 12 Ton	5					
33	MERCEDES Tipper Trucks, 25 Ton	18	15	78	3	19	
34	MERCEDES Crane and Truck	1	4	78	10	12	
35	MERCEDES Prime mover	17	18	77	13	10	
36	RENAULT Prime movers		6	49	36	15	
37	FRUEHAUF Trailers D-32 A76/25	17	11	50	30	20	
38	TRABOSA Lowloaders SRGT 45		2	38	52	10	
39	CARTEM Bitumen Distributor	1	2	53	34	13	
40	Water tank truck 10 m^3	5					
41	Water tank truck 20 Ton	2					
42	Trailer trankers		9	60	40		

contd. 10.2 Status of Construction Equipment

Item no.	Description	Contract Fleet as peroposed in Tender	Actual Fleet on site (No)	Availability in %		Broken Down and Maintenance in %	Remarks (Significance of figures, nothing major breakdowns and action taken to remedy etc.)
				Worked	Idle		
43	Bitumen Transport trailers		6	80	3	17	
44	BENDINI Crane (Nobile)	1	1	40	60		
45	AUSA Dumper	1	3	23	77		
46	DIECI Self load mixer		1	70	30		
47	ATLAS COPCO Air compress's (small)		2	70	30		
48	ATLAS COPCO Air compress's (Large)		2		100		
49	Generators	1	15	60	40		
50	COBRA Asphalt cutting m/c	1	3	3	97		
51	NORDBERG primary Crusher	1	1	55	45		
52	LARON Secondary Crusher	1	1	55	35	10	
53	LARON Tertiary Crusher	1	1	85	15		
54	KRUPP Hydraulic hammer		1	10	90		
55	INTRAME Asphalt plant	1	1	53	47		
56	BOMAG Plate vibrator		4	20	80		
57	MASSENZA Decanting plant		1	50	50		
58	MASSENZA Heating Unit		1	50	50		
59	MASSENZA Emulsion plant		1	50	50		
	Hired Equipmant						
60	CAT 140 motorgraders		6	75	25		
61	DYNAMIC vibrating rollers		3	85	15		
62	CAT 938 wheel loaders		3	95	5		
63	Water bowsers		3	74	26		
64	Tipper Trucks		9	80	20		

Fig. 10.3 Consultants Personnel Staff Attendance Record

Contract: Month:

Position	Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	REMARKS
Expatriate Staff																																	
Project Director																	A	P	P	P	A											Visit
Chief Resident Engineer		P	P	P	P	P	P	P	P	P	P	P	P	P	A	A	A	P	P	P	A	A	P	P	P	P	P	P	P	P	P		All Month
Resident Engineer 1		P	P	P	P	P	P	P	P	P	P	P	P	P	T	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L		14/30 days
Resident Engineer 2		S	S	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		All Month
Senior Materials Engineer		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		All Month
Highway Technician		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		All Month
Local Staff																																	
Assist. Resident Engineer																																	
Quantity Surveyor		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	A	A	A	A		All Month
Survey Technician		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		All Month
Inspector 1a		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		All Month
Inspector 1b		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		All Month
Materials Technician		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		All Month
Secretary		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		All Month
Draftsman		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		All Month

Legend: P = present on site; A = Addis Ababa for meetings; L = leave; = Sunday or Public Holiday; T = international travel; S = sick

Fig. 10. 5 ERA/RSDP - Status Report - *Month and Year*

Route No.		**Project Name**			
Road Classification	TR				
Proposed Work	AC/ASD>AC				
		Feasibility Study	EU	Confirmed	
Nominal Length (km)	275	EIA			
Section Length (km)	263	Detailed Design	GOE	Confirmed	
		Design Review	EU	Confirmed	
Tender Scheduled		Supervision	EU	Confirmed	
Construction Scheduled	Oct-97/Feb-01	Construction	EU	Confirmed	

Base Data		**Progress of Current Activities**					**Problems/Comments/Action**
Supervision			TOR	Expression	Short-list	Approval	
Consultant		**Selection of Consultant**					
Contract Date	15 Nov 94		Bidding	Evaluation	Approval	Award	
Contract Amount ETB	5,565,565						
Contract Period (months)	36	Activity/Report	Personnel		Equipment		
Planned Start	09 Sep 96	Mobilisation %					
Planned End	09 Oct 99		RE	ARE	ME	SE	HE
Revised/Actual Start	Oct 97	**Staffing**					
Revised/Actual End	Oct 00	Report		Date			Finalisation of the Supervision rider is still awaited -
Delay(actual v planned)		Progress Rep		May-99	ETB		leading to shortage of site staff and transportation.
Time for payment (days)	180	Cost Estimate					
Payment certified ETB	558,072	Claims Review					
Payment certified Forex	1,684,805	Total Cost Exposure					
Total Certified as ETB	2,242,872	Unpaid Invoices					
Payment to date ETB	560,020	Inv. No.	Date		Amount ETB		
Payment to date Forex	977,272						
Total Payment as ETB	1,537,292						

Construction		Activity/Rep	Personnel	Facilities	Equipment		
Contractor		Mobilisation					
Contract Date	15-Sep-97	Staff	PM	APM	ME	SE	HE
Revised Contract Amount ETB	341,701,938	Attendance					
Construction Period (MTh)	40	General	20	40	60	80	100
Maintenance person (MTh)	12	Site preparation					
Planed Start	15-Oct-97	Earthworks					------- bridge repair may have caused delays in
Planned End	14-Oct-00	Drainage					haulage. Bridge now is open to two way traffic.
Revised/Actual Start	15-Oct-97	Road base					Contractor has created a separate construction
Revised/Actual End	14-Feb-01	Bit. Pavement					group for construction in urban sections.
Elapsed time (MTh)	20.5	Road furniture					
% Construction Period	51.25%	Traffic Man.					Processing of base in general is behind the
Delay (Actual v Planned)	12.8%	Scheduled Aggregate Progress (km)			85.0	32.1%	scheduled progress start.
Time for payment (days)	90	Actual Aggregate Progress (km)			58.0	21.90%	The Contractor has been advised to utilise more resources.
Payment certified ETB	56,772,746	Unpaid Invoices					
Payment certified Forex	107,684,351	Inv. No.	Date	Amount ETB			Progress in shoulder construction remains slow,
Total Certified as ETB	164,457,097	19	11-Jun-99	7,264,490.89			despite now using less coarse material
Payment to date ETB	56,772,746						Many break-downs of the used machinery continue.
Payment to date Forex	100,419,860						Contractor is advised to employ additional
Total Payment as ETB	157,192,606						resources if required.

Pay Item	**BoQ ETB**	**Revised ETB**	**Sch ETB**	**% BoQ**	**Cert ETB**	**% Rev**
General	12,589,473	14,784,668	11,430,027	77.3	11,029,362	0.0
Site Preparation	13,641,040	20,003,607	11,102,002	55.5	6,261,129	0.0
Earthworks	12,750,318	15,062,168	7,064,157	46.9	3,343,801	0.0
Drainage	26,050,831	26,343,368	7,824,010	29.7	3,108,529	0.0
Road base	66,713,281	82,504,282	29,701,541	36	16,665,861	0.0
Bituminous Pavement	168,970,643	172,839,456	54,098,750	31.3	28,172,831	0.0
Road furniture	4,062,243	4,062,243	792,137	19.5	4,062	0.0
Traffic measures	6,102,046	6,102,046	2,691,002	44.1	1,610,940	0.0
Various (Materials on site and daywork)		1	0	0	0	0.0
Total	310,979,874	341,701,938	124,703,627	36.5	70,196,515	

Progress on the ---------- section remains far behind that planned (25 km behind). Contractor instructed to follow and catch up the approved work programme.

Onset of rains have caused delays in progress, as expected.

Fig. 10.6 Accident Record

Contract: Month:

Date	Accident Description	Name	Injury	Severity	Damage to property				Contract Employee	Contract Insurance Claim	Remarks
					Property Damaged	Damage Type	Severity	Owner	Yes/no	Yes/No	
01-Jun-99	hit by Bomag roller		dislocation R leg	medium	no	-	-	-	yes	yes	
01-Jun-99	fall from truck		dislocation L ankle	medium	no	-	-	-	yes	yes	
01-Jun-99	hit by gravel stone		wounded R finger	minimum	no	-	-	-	yes	yes	
01-Jun-99	hit by roller		wounded L thumb	minimum	no	-	-	-	yes	yes	
01-Jun-99	hit by stone		wounded L index	minimum	no	-	-	-	yes	yes	
03-Jun-99	stone entered L eye		traumatic conjunctivitis	minimum	no	-	-	-	yes	yes	
04-Jun-99	metal entered R eye		traumatic conjunctivitis	minimum	no	-	-	-	yes	yes	
04-Jun-99	pierced by a pin		wounded L foot	minimum	no	-	-	-	yes	yes	
05-Jun-99	car accident		body injury	medium	no	-	-	-	yes	yes	
05-Jun-99	car accident		body injury	medium	no	-	-	-	yes	yes	
05-Jun-99	metal entered R eye		traumatic conjunctivitis	minimum	no	-	-	-	yes	yes	
12-Jun-99	fall from a bridge		injury of face	medium	no	-	-	-	yes	yes	
12-Jun-99	hit by stone		injury of R eye	minimum	no	-	-	-	yes	yes	
14-Jun-99	stone entered R eye		trauma of eye	minimum	no	-	-	-	yes	yes	
14-Jun-99	stone entered L eye		trauma of eye	minimum	no	-	-	-	yes	yes	
15-Jun-99	fall from hill		dislocation L foot	medium	no	-	-	-	yes	yes	
17-Jun-99	hit by stone		trauma of R eye	minimum	no	-	-	-	yes	yes	
17-Jun-99	car accident		head injury	minimum	no	-	-	-	yes	yes	
17-Jun-99	hit by a crushed stone		trauma of R eye	medium	no	-	-	-	yes	yes	
17-Jun-99	metallic substance entered R eye		trauma of R eye	minimum	no	-	-	-	yes	yes	
21-Jun-99	hit by grader		dislocation of R ankle	minimum	no	-	-	-	yes	yes	
21-Jun-99	stone entered R eye		trauma of R eye	medium	no	-	-	-	yes	yes	
21-Jun-99	stone entered L eye		trauma of L eye	minimum	no	-	-	-	yes	yes	
23-Jun-99	fall over stone		wounded R knee	minimum	no	-	-	-	yes	yes	
25-Jun-99	injured by somebody overhead		wounded head	minimum	no	-	-	-	yes	yes	

Appendix 7-17 - Guideline CA9 PE's Site Visit Reports

GUIDELINE N° CA9

Ethiopian Roads Authority

Guideline N° CA9

PE's Site Visit Reports

Contract Administration Manual

December 1999
Rev November 2006

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
ETHIOPIAN ROADS AUTHORITY
CONTRACT ADMINISTRATION DIVISION

PE SITE VISIT REPORTS

December 1999
Rev November 2006

PROJECT ENGINEER'S SITE VISIT REPORTS

for

ERA MANAGEMENT

Forms for reporting the findings of routine inspections of construction work by Implementation Branch engineers were developed previously for the ERA Civil Contract Management Systems Manual. As the Contract Administration Division (CAD) adopted such forms it is proposed that Construction Contract Implementation Division Project Engineers (PE) now use them for on the RSDP projects.

By using a standard format it should ensure that:

i) key issues are addressed during the inspections, and

ii) findings are reported in a consistent way, convenient for monitoring and control.

These inspections and the associated reports are not intended to duplicate the Consultant's progress reports or to interfere with the Consultant's contractual responsibilities in supervising construction of the Works, but are to ensure ERA are fully aware and satisfied that: (i) the design standards and quality of the finished work being approved on their behalf are acceptable to ERA; (ii) the Specification is being applied together with the Conditions of Contract; (iii) the Consultant and Contractor's supervision staff are actually on Site as contracted, and of suitable calibre to represent the interests of ERA; (iv) progress of the Works as reported by the Consultant and the interim measurement approved for payment are consistent with the actual works constructed; (v) actual progress is evaluated against the programmed expectations; and (vi) alleged construction constraints are identified (and hopefully resolved) with all parties involved with the problems.

The PE shall visit site each month and undertake an inspection. The PE will prepare the inspection report. The PE will submit the monthly report to the CCID management. Should subsidiary visits be made, these forms can also be used for these inspections, to record events and then be filed for reference.

Some of the forms are recommended for partial completion in HQ immediately prior to commencement of the inspection, using data from the supervision consultant's current progress report etc., as shown in the 'notes' on the respective forms. It is also recommended that the engineer conducting the inspection should go equipped with: the Specification, the Conditions of Contract, the current progress report and ERA's review memo, any other ERA queries required to be resolved on site, copies of all the construction programmes, a camera and 30 m measuring tape.

Ideally the Inspection report and the Consultant's progress report would be submitted by the PE to CCID management at the same time, along with the PE's summaries of each report. If, however, there is a difference in dates of reporting between the progress report submitted by the consultant and the inspection report prepared by the PE this will not be feasible. It is therefore recommended that the PE's memorandum on the Consultant's progress report is submitted with this report too. It will then be simple for the PE to use this summary to complete Form No. 8 prior to carrying out his subsequent inspection.

CCID management must respond to the PE, if his summaries contain requests for action or decisions, within one week or before the next progress meeting (whichever is shorter).

Cover page

Contract: [*short project title]***.....**

Project Engineer: .....

Monthly Report No …… for ……. (Month and Year)

Report by: .....

CONTENTS

Form No. **Page No.**

MEMORANDUM – MONTHLY INSPECTION REPORT SUMMARY /1 **Sheet /**

To : cc :

From : Ref. :

Date : Signed :

Contract: Inspection Date:

Page No.	Item No.	Points of Particular Interest (requiring attention/action as shown)	Referred for Info only	Referred for Action

1/ This covering memo is to be completed by Project Engineers, to accompany the Monthly Inspection Report to management – and shall identify all points of interest for their attention/action.

2/ For ease of reference all pages of the report should be numbered sequentially.

3/ The memo and report should be given to CCID management within five days of the date of the inspection.

MEMORANDUM – PROGRESS REPORT NO. …. /1 **Sheet** /

To : cc :

From : Ref. :

Date : Signed :

Contract: Month (and year):

Page No.	Item No.	Points of Particular Interest (requiring attention/action as shown)	Referred for Info only	Referred for Action

1/ This covering memo is to be completed by all Project Engineers and should accompany the Consultant's Report to CCID management. It shall identify all points of interest for their attention/action.

2/ Detailed longhand comments are to be made on the accompanying report, on the opposite side of the actual report sheets, and initialled.

3/ This memo should be given to CCID management within three days of receipt of the Report from the Consultant.

INTERIM INSPECTION OF FINISHED ROAD WORKS /1 **Sheet** /

Contract:

Inspection Date:

Road Work Elements/2	Location km	State of Completion /3	Opened to Traffic (Date/ Period)	Materials				Finished Tolerances			Maintenance			Remarks (detail defects such as corrugations forming or bleeding etc. the action required and by whom.)
				Types	Source /4	Check to Spec /5	Overall Rating /6	Types	Check to Spec /5	Overall Rating /6	Types /7	Check to Spec /5	Overall Rating /6	

NOTES:

1/ This form is to be used to check that the quality of the finished Works is: (i) in accordance with the Contract (as far as can be ascertained by visual inspection): AND (ii) acceptable to ERA.

2/ Insert all homogeneous elements of the 'finished'/3 construction/rehabilitation activities (e.g. preparation of formation; gravel wearing course; culvert rehab; bridge rehab; masonry works etc.)

3/ State of Completion to differentiate between: (i) works totally completed and formally handed over; (ii) works substantially completed (and under maintenance); (iii) other works approved by the Engineer;
(iv) works submitted for approval.

4/ Material sources to indicate borrow pit location.

5/ The inspection is to include a visual check of the finished work materials for conformity with the contract specification and conditions of contract.

6/ The inspector is to also enter his overall assessment of the quality of the Works achieved; rating them 0-5, where; 0 = Very bad; 1 = Bad; 2 = Poor; 3 = Fair; 4 = Good; 5 = Very Good.

7/ Maintenance types to include: (i) curing/watering etc; (ii) Contractor partial maintenance of road in a trafficable condition; (iii) Full formal maintenance of the Substantially Completed Works by Contractor;
(iv) Maintenance by ERA.

Signed: Name: Position:

Form No. 1

INTERIM INSPECTION OF CONSTRUCTION ACTIVITIES IN PROGRESS /1 **Sheet** /

Contract:

Inspection Date:

Construction Rehabilitation + Maintenance Activities /2	Location km	Equipment Availability				Materials				Method of Working			Remarks
		Equipment Type	Contract No. /4	Actual No. Seen	Shortfall No.	Type	Source	Check to Spec/5	Overall Rating /6	Check to Spec	Safety Rating /6	Overall Rating /6	

NOTES:

1/ This form is to be used to check that the materials, resources and methods of working employed are: (i) in accordance with the Contract (as far as can be ascertained by visual inspection): AND (ii) acceptable to ERA.

2/ Insert all elements of the construction, rehabilitation and maintenance /3 activities (e.g. preparation of formation: gravel wearing course; culvert rehab; bridge rehab; masonry works etc.)

3/ Maintenance activities to include: (i) Contractor partial maintenance of the road in a trafficable condition; (ii) Full formal maintenance of the Substantially Completed Works by Contractor; (iii) Maintenance by ERA.

4/ As per Tender information or subsequent contract agreement.

5/ The inspection is to include a visual check of the materials (and methods of working) for conformity with the contract specification and conditions of contract.

6/ The inspector is to also enter his assessment of standards of safety/traffic control measures, quality of materials and methods of working employed; rating them 0 - 5, where: 0 = Very bad; 1 = Bad; 2 = Poor; 3 = Fair;
4 = Good; 5 = Very Good.

REVIEW OF DESIGN PARAMETERS BEING APPLIED /1 Sheet /

Contract: **Inspection Date:**

Design Parameters	ERA Standard	Contract Standard	Checked /1 Acceptable	Remarks
Road Type Road Class				
Carriageway width (m) Shoulder width (m)				
Minimum Horizontal Radius (m) Minimum Vertical Radius (m)				
Min. Horizontal Site Distance (m) Min. Vertical Site Distance (m)				
Maximum Superelevation (%) Normal Carriageway Camber (%) Shoulder Crossfall (%) Maximum Longit. Gradient				
Wearing Course: Type Thickness (mm) Shoulder Surface: Type Thickness (mm) Base Course: Type Thickness (mm) Sub Base: Type Thickness (mm)				
Bridge Design Code / Standard				

1/ The inspector should use this form to review the design standards being adopted/incorporated in the Works.

2/ Any additional key design parameters should be entered as appropriate.

Signed: Name

Position

Form No. 3

MOBILISATION STATUS & MEASUREMENT CHECK /1 **Sheet /**

Contract: **Inspection**
Date:

Mobilisation Elements	Quantity in Contract	Quantity on Site /1	Percent Complete /2	% Program'd for Complet'n	% Payment Applicable /2	% Payment Approved /3	Remarks
1. Consultant's Staff							
Expat Staff							
Local Support Staff + Counterparts							
2. Consultant's/ER's Facilities							
ER's Office + Equipment + Furniture + Utilities							
ER's Accommodation + furniture + equipment							
ER's Guest Quarters + furniture + equipment							
ER's Vehicles							
3. Contractor's Camp etc.							
Expat Staff							
Local Senior Staff							
Office + Office Equipment Furniture + Utilities							
Laboratory + Equipment							
Accommodation + house equipment + furniture							
Supervision Vehicles							
Workshop + Store + Fuel Tanks + Compound etc.							
Provision + Commission Construction Equipment							
Install + Commission Construction Plant (Crushers etc.)							

NOTES:
1/ In this instance 'on Site' being taken to mean at the actual construction site (not including the port etc).
2/ As estimated by ERA's Project Engineer or APE conducting this inspection.
3/ As per the last interim payment certificate issued by the Engineer.

Signed: Name
Position

Form No. 4

ROAD WORKS STATUS AND MEASUREMENT CHECK /1 **Sheet /**

Contract:

Inspection Date:

Construction Rehabilitation + Maintenance Activities /2		Completed + Handed-over		Substantially Completed (+ Under Maint)		Other approved Works		Works Awaiting Approval		Works Actually Under Construction		Other Sect. handed over to contractor for construction		Total Works Approved or Awaiting Approval	Total Works Programmed Completed to date	Remarks
		From (km)	To (km)	From (km)	To (km)	From (km)	To (km)	From (km)	To (km)	From (km)	To (km)	From (km)	To (km)			
	actual /4															
	paid /5															
	actual /4															
	paid /5															
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	paid /5															
	actual /4															
	paid /5															
Full formal maintenance by Contractor /3	actual /4															
	paid /5															
Partial maintenance of Road in trafficable cond. by Contractor	actual /4															
	paid /5															
Maintenance by ERA (or other Maintenance Contractor)	actual /4															
	paid /5															

NOTES:

1/ Road Works taken to include all works except (in this instance only) the Engineer's Facilities (laboratory, office, house and vehicles etc.), the status of which is to be recorded on another form, together with mobilisation.

2/ Insert all elements of the construction, rehabilitation and maintenance /3 activities (e.g. preparation of formation; gravel wearing course; culvert rehab; bridge rehab; masonry works etc.)

3/ Maintenance activities to include; (i) Contractor partial maintenance of the road in a trafficable condition; (ii) Full formal maintenance of the Substantially Completed Works by Contractor; (iii) Maintenance by ERA.

4/ As verified by inspection.

5/ As per the last interim certificate issued by the Engineer.

Signed: Name: Position:

Form No. 5

SENIOR SUPERVISION STAFF CHECK AND ASSESSMENT /1 Sheet /

Contract:

Inspection Date:

Name	Position	Present on Site /4	Where Found on Site /5	Language Rating /6	Supervision Rating /7	Organisational Rating	Experience + Tech. Rating /8	Contractual Rating /9	On-top-of Job Rating/3	Remarks (Why absent, should be replaced etc.)
1. CONSULTANT'S STAFF										
2. ERA STAFF (Assistant RE's etc.)										
3. CONTRACTOR'S & SUBCONTRACTOR'S STAFF										

NOTES:

1/ BEFORE EMBARKING ON THE SITE INSPECTION, the staff names and positions should be entered by reference to the last Progress Report.
2/ This form is to be used (i) to verity staff actually on Site at GIVEN TIME and (ii) for rating individual performance.
3/ Ratings to be scored 0 to 5, where 0 = very bad; 1 = bad; 2 = poor; 3 = fair; 4 = good; 5 = very good.
4/ Form to be completed to show whether present (tick) or absent (cross).
5/ Where found on Site to show whether in the office, house or on Site supervising the construction activities, at the time the inspection team arrived.
6/ Language rating to assess contract language ability for proper supervision of the Works.
7/ Supervision rating to reflect effective superintendence of the Works i.e. time and effort afforded to overseeing and controlling actual site operations.
8/ Experience + Technical rating to reflect the technical capability of the man for the post.
9/ Contractual rating to reflect the awareness of claims and conditions of contract etc. in the formal communications.

Signed: Name: Position:

Form No. 6

MAINTENANCE OF SITE RECORDS CHECK /1 Sheet /

Contract: **Inspection**
Date:

Actual Itemised Records	Seen + Inspected /1	Remarks
1. Site Diary		
2. Progress Photographs		
3. Equipment Availability Records		
4. Weather/Construction Delay Records		
5. Accident Records		
6. Official Site Visit Records		
7. Contemporary Records /3 (Re Claims etc.)		
8. Material Test Result Summaries (For each Borrow Pit etc.)		
/2		

NOTES:
1/ Tick only those records actually seen and inspected and verified as being maintained.
2/ Insert any other records not shown above which are being maintained or which are to be maintained.
3/ Contemporary Records are to be maintained as per FIDIC General Conditions of Contract, Clause 53.2.

Signed: Name
Position

Form No. 7

CLARIFICATION OF THE CONSULTANT'S PREVIOUS PROGRESS
REPORT NO. … … /1 Sheet /
AND ANY OTHER ERA ISSUES TO BE RESOLVED/2

Contract:

Report Date:

Issues Requiring Clarification/Attention /3	Clarification/Action taken on Site

1/ BEFORE EMBARKING ON THE SITE INSPECTION, the issues requiring clarification should be entered by reference to the related ERA management memorandum (ref. memprogrep). The aforesaid referenced memo originating from the Project Engineer should accompany each Consultant's Progress Report to management.

2/ Also, BEFORE EMBARKING ON THE SITE INSPECTION, any other points arising which ERA wish to be clarified should be entered beforehand; and raised/resolved during the inspection.

3/ Points of Particular Interest should be referenced (i.e. show which progress report or letter, date, page and item referred to) AND THE REFERENCE DOCS SHOULD ACCOMPANY THE INSPECTION TEAM.

Signed: Name: Position:

Form No. 8

CONTRACTOR'S ALLEGED CONSTRUCTION CONSTRAINTS AND ISSUES REQUIRING RESOLUTION /1 Sheet /

Contract:

Date:

Alleged Constraints and Issues Requiring Resolution	Consultant's Responses	APE/PE's Remarks
Contractor's Representatives (Names & Positions):	Consultant's Representatives (Names & Positions):	APE/PE's Name

1/ This form is to be used in conjunction with a similar form for recording the Consultant's alleged problems/constraints.
2/ Details should be presented here of any problems the Contractor alleges are currently affecting the execution/construction of the Works, which may have contractual consequences.
3/ The Consultant's reaction/response/recommendations to resolve the problems or constraints identified should be presented against the respective problem/constraint.
4/ The Contractor's and Consultant's positions to be established at the Monthly Progress Meeting or another separate meeting called to specifically identify any problems or constraints, such as unacceptable delay in approval of the Works.

Signed: Name: Position:

Form No. 9

CONSULTANT'S ALLEGED PROBLEMS, CONSTRAINTS AND ISSUES REQUIRING RESOLUTION /1 Sheet /

Contract:

Date:

Alleged Problems, Constraints & Issues Requiring Resolution	Consultant's recommendation or requirements for Resolution	APE/PE's Remarks
Consultant's Representative (Names & Positions) raising matters of concern	Consultant's Representative (Name & Position) suggesting resolution to problem	APE/PE's Name

1/ This form is to be used in conjunction with a similar form for recording the Contractor's alleged construction/constraints.
2/ Details should be presented here of any problems the Consultant alleges are currently affecting his ability to carry out his duties, which may result in contractual consequences.
3/ The Consultant's recommendations to resolve the problems or constraints identified should be presented against the respective problem/constraint.
4/ The Consultant's position to be discussed (if necessary) with ERA at a meeting to specifically identify such problems or constraints.

Signed: Name: Position:

Form No. 10

CONTRACT DOCUMENT PROBLEMS 1/4 **Sheet /**

Contract:
Date:

1. CLAUSE: Ref:

Text (or attach extract from contract docs):

2. PROBLEM 2/:

3 AMENDMENT TENTATIVELY PROPOSED FOR FUTURE CONSIDERATION 3/5/:

NOTES
1/ These forms should be completed by the Supervision consultant and included in the monthly inspection reports.
2/ In identifying problems with or relating to the Contract Documents, ERA hope to refine their standard contract documents and thereby avoid repetition of the same problem(s) on future contracts.
3/ All contract document amendments proposed herein are acknowledged by ERA as given in good faith and free of liability.
4/ Use a separate form for each problem.
5/ The extent of participation in submitting proposed amendments is to be a factor in ERA's rating of Consultant's performance.

Signed: Name

Position

Form No. 11

ANY OTHER MATTERS /1 **Sheet** /

Contract: **Inspection Date:**

Form No. 12

PROGRESS PHOTOGRAPHS /1 **Sheet** /

Contract: **Inspection Date:**

1/ Where appropriate, a section of progress photographs should be included here, with each photograph captioned to show: location; description (inc. specific points of note); date; and negative number. All such photographic records shall be presented in colour.

2/ The inspection photographs should augment the Consultant's Progress Report record photographs, only showing points of particular note.

Form No. 13

KEY REFERENCES /1 **Sheet** /

Contract: **Inspection Date:**

INDEX OF ATTACHMENTS

NOTE:

1/ Copies of significant correspondence, minutes of meetings etc. supplied by the Contractor or Consultant during the inspection are to be presented for reference purposes following this page; while this form should be completed as an index for the attachments.

Form No. 14

MATERIAL TEST RESULTS /1 **Sheet** /

Contract: **Inspection Date:**

INDEX OF ATTACHMENTS

NOTE:

1/ A section of material test results should be included here. The results to be presented in 3 sections: (i) Summary of current Borrow Pit Results, at time of inspection; (ii) Sample of typical detailed gradation plots etc.; and (iii) Full details of any significant test results – with the Consultant's comments recorded on each sheet TOGETHER WITH THOSE OF THE INSPECTOR.

Form No. 15.

ACTION TAKEN BY INSPECTION TEAM /1 **Sheet** /

Contract: **Inspection Date:**

NOTES:

1/ Action taken by the Inspection Team regarding issues raised during this inspection or a previous inspection are to be reported here.

2/ Issues resolved by PE or ERA management since last inspection are also to be reported here.

Form No. 16.

Appendix 7-18 - Guideline CA10 Consultant's Performance Evaluation

GUIDELINE N° CA10

Ethiopian Roads Authority

Guideline N° CA10

Consultant's Performance Evaluation

Contract Administration Manual

November 2006

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
ETHIOPIAN ROADS AUTHORITY
CONTRACT ADMINISTRATION DIVISION

CONSULTANT'S PERFORMANCE EVALUATION

November 2006

Table of Contents

1 Background

A number of ERA's projects have suffered as a result of poor performance by some of its contract design, preparation and supervision Consultants. In consequence, ERA has established this Guideline for the Evaluation of Consultant's Performance.

It is intended that the application of the measures contained in this guideline will result in an improvement of Consultant's performance and a reduction of consequent problems which include but are not limited to:

- implementation delays resulting from not adhering to agreed project time schedules,
- implementation difficulties resulting from inappropriate designs and solutions,
- claims resulting from poor quality documents
- budget difficulties resulting from inaccurate cost estimates.
- implementation delays and budget difficulties resulting from poor quality and inaccurate geotechnical and topographical surveys.
- implementation difficulties resulting from poor supervision

2. Introduction

It is an unfortunate consequence of the relationship between ERA and its Consultants that any complaint, with regard to poor performance of its Consultants, will invariably also reflect on ERA. The reason for this being that the responsibility for the definition of what is required of the Consultant and the management of the Consultant lie with ERA. The consequence of this is that any criticism of Consultants usually results in a counter criticism, by the Consultant, of ERA.

In order to avoid such criticism, by Consultants, it is essential that ERA's internal procedures and quality control mechanisms are maintained to ensure that it's Terms of Reference clearly and unambiguously:

- describe exactly what is expected of the completed project,
- describe exactly what is required of the Consultant,
- detail the required project implementation programme,
- detail any particular dates by which specific information or deliverables are required,
- define ERA's responsibility with regard to the provision of information, and

further, that the same internal procedures and quality control mechanisms ensure that ERA fully respects all of its contractual responsibilities with respect to the provision of information, timely approvals, decisions and making of payments for services rendered.

3. Enabling Provisions

Current Ethiopian legislation *(see Appendix 1)* requires the inclusion of "penalty" clauses in ERA service contract documents. The same legislation provides for the registration of consultants and contractors and for their debarment, in the event of their failing to fulfil their obligations under their contracts. In addition all standard forms for consultancy contracts *(see Appendix 2)* include a requirement for consultants to maintain professional liability insurance.

The definition of Ethiopian law, as the law applicable to the Consultancy contracts, and the adherence to standardised contract formats, therefore, provides ERA with the contractual "tools" to facilitate the sanctioning of its Consultants, in the event of poor performance.

Although the proclamation and directive provide details of the requirements for registration of local consultants it does not provide any guidelines for debarring consultants, other than that they must have *"seriously neglected their obligations under a public procurement contract"*. The proclamation further requires that any decision to debar be taken by the Public Procurement Agency, on the basis of information provided by the procuring entity, in this case ERA.

In the case of foreign consultants the same Proclamation states that, for International Procurement methods, technical specifications and conditions of contract shall be *"of a kind generally used in international trade"*. In addition the Directive states, under Part I item 5 (3), that *"where the Procurement is financed out of the proceeds of the foreign loan or grant, the procurement will be made in accordance with the loan or grant agreement"*. Therefore, in the case of foreign consultants, the registration and exclusion criteria to be satisfied are those specified by the individual funding agencies.

WB and AfDB together with several other Multilateral Development Banks and international organisations that finance or employ consultants maintain a data base called "Data on Consulting Firms" (DACON). This contains basic information on the qualifications of consulting organisations. However, registration on DACON is not mandatory for consultants interested in being considered for either WB or AfDB financed assignments and more importantly, DACON is not a list of pre-approved consultants. Although DACON is a useful source of information on consultants, it can not be used to identify "acceptable" consultants.

Although both WB and AfDB's guidelines require an evaluation of consultant's performance to be undertaken the procedures to be followed, in the event of poor performance, are unclear. The only guidance available is provided in Chapter 20 of the WB Consultant Services Manual which is summarised as follows:

> *Consultant's performance should be monitored during the assignment, but a final opinion should be formally expressed only upon completion. Official comments by WB staff should pertain only to the assignment and take into consideration the views of the Borrower. In doing so the WB staff should:*
>
> - *Monitor and report on consultant's performance*
> - *In the event of poor performance the Borrower should inform the consultant's in writing and give them the opportunity to comment.*
>
> *The Implementation Completion Report (ICR) prepared jointly by the WB and the Borrower should be the main vehicle for the commenting on the consultant's performance.*
>
> *It should however be remembered that the ICR is a public document and that the following should be considered when evaluating a particular consultant:*
>
> - *Criticism must be restricted to fact and should not include subjective judgements*
> - *Criticism on performance must be supported by evidence*
> - *Consultants must be given the opportunity to respond in writing and their comments included in the ICR.*
>
> *WB staff should consult with the Consultant Services Adviser (in the Procurement Policy and Services Group) and Legal Department when reporting on important negative aspects of consultant's performance in the ICR. The Procurement Policy and Services Group records information on the performance of consultants.*

AfDB similarly requires Borrowers to prepare a consultant performance evaluation report for submission to the Bank for their records.

Whilst both WB and AfDB's guidelines are silent on the maintenance of a "black list", the purpose of the review of the consultant's performance and the maintenance of that evaluation is for referral for the purposes of future approval.

Both ERA and IDA have standardised formats for the evaluation of Consultant's Performance. These are discussed further under section 5, below.

4. ERA Mitigation Measures

The application of Ethiopian law and use of standardised contract and evaluation formats will not, by themselves, provide any assistance with or guarantee of improved quality or time keeping, appropriateness of designs, accuracy of financial estimates or quality of supervision.

The likelihood of having a poorly performing consultant may be reduced by maintaining internal procedures and quality control mechanisms which are designed to ensure that:

1. A project's objectives, with particular reference to the norms and standards to be adopted, and ERA's expectations for the "finished product", are clearly and unambiguously defined.
2. ERA's expectations, with regard to the Consultants deliverables, level of service and timing are clearly and unambiguously defined and that these are linked to penalty and liability clauses.
3. A realistic project implementation programme, including dates on which defined deliverables are to be provided by both ERA and the Consultant, is demanded.
4. Both ERA and the Consultant provide comprehensive details of what they intend doing and providing.
5. Continuous monitoring of the progress of the Consultant, in relation to the programme, occurs.
6. Immediate action to recover any delays, by the Consultant, is implemented.
7. Continuous monitoring of the progress of ERA, in relation to the programme, occurs
8. Immediate action to recover any delays, by ERA, is implemented.
9. Contractual provisions are enforced, whenever necessary.
10. As much relevant project data as possible is provided to the Consultant.
11. The ERA Project Engineer is in possession of and fully understands all of the pre-implementation documentation, thinking, decisions, philosophies etc.
12. ERA actively participates in the development of designs by:
    - Regularly meeting with the Design Engineers to discuss and understand the design solutions as they are developed and determining deadlines for future actions
    - Identifying areas of uncertainty and risk and making contractual and financial allowances for accommodating these
    - Ensuring that designed solutions are "typical" ERA/Ethiopian solutions, which satisfy ERA/Ethiopian policy
    - Ensuring that materials proposed for use are economically available in the project area
    - Ensuring that the equipment necessary for construction is economically available in the project area or that the scale of the project justifies the importation of the equipment
    - Ensuring that the public and public officers understand what the project will deliver and that it satisfies their expectations
    - Understanding and accepting the Design Engineer's rational for accepted solutions
    - Confirming that the design criteria as defined in the ToR have been complied with.
    - Defining the project's budget
13. ERA actively participates in the supervision of the Supervisor by:
    - satisfying itself that sufficient appropriate records are being maintained
    - satisfying itself that the testing regime ensures compliance with the specification
    - ensuring that the Supervisor does not introduce unnecessary bureaucracy
    - ensuring that the Supervisor acts within the contract's time constraints

5. ERA Required Action

This performance evaluation system has been designed for the worst case scenario i.e. it assumes that despite ERA complying with all of its own internal procedures and quality control mechanisms, a Consultant may still not produce designs or supervision of an acceptable standard. In this case the responsibility for the failure to perform will clearly lie with the Consultant.

The remainder of this document focuses on the actions necessary by ERA to ensure that poor performance is recorded and, in the event that debarring is necessary, that the justification for exclusion is robust and transparent enough to withstand audit by GoE and or a Funding Agency.

Both the GoE and Funding Agencies take the issue of "black listing" very seriously and without undisputed concrete evidence of poor performance, they are unlikely to agree to even the recording of accusations of failure to perform let alone the debarring of a consultant from future participation in projects. This is reinforced by the inclusion of provisions which require the consultant to be advised of the complaint and the consultant to respond to the complaint.

The documentary requirements for the exclusion of a consultant from consultancy services bidding process are the same for both locally and externally funded projects.

In the case of **locally funded projects** ERA is required to maintain on file:

- concrete evidence of each and every "failure to perform", which must include references to terms of reference, instructions issued, correspondence, implementation programmes, required deadlines etc.
- the consultant's response/comment on each any every "failure to perform" notification.
- ERA's fully supported justification to the Public Procurement Agency, which details the nature of the "failure to perform" and its recommendation that the consultant's registration be revoked.

ERA's evaluation and reporting should be in the format included in Appendix 3 for Design Consultants and Appendix 4 for Supervision Consultants.

In the case of **foreign funded projects** ERA is, in general terms, required to maintain on file:

- concrete evidence of each and every "failure to perform", which must include references to terms of reference, instructions issued, correspondence, implementation programmes, required deadlines etc.
- the consultant's response/comment on each any every "failure to perform" notification.
- the communication of the above information to the funding agency, including the consequences of the "failure to perform" and ERA's fully supported justification of why it wishes the consultant to be excluded from future bidding processes
- The communication of the above to the PPA with the Funding Agency's decision.

The IDA Consulting Services Manual under Annex 9 includes a Consultants Performance Evaluation Checklist and Form of Evaluation. ERA's final evaluation and reporting should be in this general format. This has been included as Appendix 5.

In both of the above cases it is necessary to submit the Evaluation Report to the Procuring Authority or Funding Agency. A sample letter of Transmittal is included as Appendix 6.

6. Completion of Performance Evaluation Forms

In undertaking the evaluation of a consultant it is essential that all those involved limit themselves to purely objective[8] comments and facts.

It is worthwhile repeating the advisory notes contained in the WB's guidelines for the preparation of project Implementation Completion Reports as they are equally applicable to all projects no matter what the source of their funding.

> *"It should however be remembered that the ICR is a public document and that the following should be considered when evaluating a particular consultant:*
>
> - *Criticism must be restricted to fact and should not include subjective judgements*
> - *Criticism on performance must be supported by evidence*
> - *Consultants must be given the opportunity to respond in writing and their comments included in the ICR.*
>
> *WB staff should consult with the Consultant Services Adviser (in the Procurement Policy and Services Group) and Legal Department when reporting on important negative aspects of consultant's performance in the ICR. The Procurement Policy and Services Group records information on the performance of consultants."*

Appendices 3 and 4 also contain guides to the completion of the ERA and IDA's Forms of Performance Evaluation respectively.

[8] Exhibiting facts uncoloured by feelings or opinions.

Appendix 1 - Proclamation 430/2005 and Applicable MFED Directive

On 12 January 2005 the GoE published, in its Federal Negarit Gazeta, Proclamation 430/2005 entitled "Determining Procedures of Public Procurement and Establishing its Supervisory Agency".

The purpose of this Proclamation was to establish a Supervisory Agency to oversee the procurement of all Goods, Services and Works by all public bodies, which are partly or wholly financed by Federal Government budget and, further, to define the procedures applicable to such procurement.

The proclamation, under Article 55 (2) provided for the issuance of a Directive by the Minister of Finance and Economic Development, of a directive for the implementation of the proclamation. This Directive was issued in July 2005.

Although not reproduced in full the relevant extracts of both the Proclamation and its Directive are included below for reference.

Proclamation Article 4 (1) International Obligations

To the extent that this Proclamation conflicts with an obligation of the Federal Government under or arising out of an agreement with one or more other states or with an international organisation, the provisions of that agreement shall prevail.

Proclamation Article 5 Procurement Directives

The Minister is authorised to issue procurement directives to fulfil the objectives and carry out the provisions of this proclamation.

Proclamation Article 11 Functions of the Agency

The functions of the Public Procuring Agency are, amongst others:

- *to receive, review, record and register suppliers of consultancy services*
- *to maintain a list of suppliers who have been debarred from participating in public procurement*

Proclamation Article 21 (6) Qualifications of Candidates

The Agency shall issue detailed rules concerning the registration procedures.

Directive Article 5 (3) Principles

Where the Procurement is financed out of the proceeds of foreign loan or grant, the procurement will be made in accordance with the loan or grant agreement.

Directive Article 11.7 (5) Terms and Conditions of Contracts

The contract to be signed between the procuring entity and the supplier shall contain a provision stipulating the following action be taken, if the supplier failed to deliver the goods and services or to complete the works on the date specified in the contract:

a shall pay a penalty of 0.1% or 1/1000 of the value of the undelivered item for each day of delay;

b the procuring entity shall have the right to terminate the contract if the penalty to be calculated exceeds 10% of the contract price;

c if the delay in performing the contract affects its activities the procuring entity may terminate the contract giving advance notice, without any obligation to wait until the penalty reaches 10% of the value of the contract;

Directive Article 23 (2) Use of Approved List of Suppliers

To participate in any Public procurement being registered in the supplier list is a prerequisite. A local supplier desiring to participate in the supply of goods and rendering consultancy services shall have to obtain a Registration Certificate from the Procurement Agency and a supplier desiring to participate in construction works and supply of vehicles.....

Any supplier desiring a Registration Certificate shall complete the registration form and provide the following information:

a) Trade License

b) Tax Clearance Certificate

c) ..... submit Professional Certificate[9]

d) Suppliers engaged in construction works shall, ...

Directive Article 23 (6) Use of Approved List of Suppliers

The following is a précis of Article 23 (6)

Where the supplier fails to fulfil its obligations under the contract the procuring entity shall send the name of the supplier and supporting documentation to the procurement Agency, who shall,

a) depending on the gravity of the fault issue a written warning to cancel or cancel the registration of the supplier

b) following notification, obtain within 5 days the comment of the consultant on the accusations

c) take an appropriate decision with regard to the consultant's registration or revocation thereof

[9] The requirements for or issuing authority of a "Professional Certificate" are not defined in either the Proclamation or the Directive.

Appendix 2 - WB Procurement Guidelines

The following IDA Guidelines will provide further direction on this subject:

WB Financed Procurement Manual Procurement Policy and Services Group,

Operations Policy and Services Group

VPU

Guidelines - Selection and Employment of Consultants by World Bank Borrowers May 2004

The following extract is taken from the World Bank Standard Contract document for Complex Time Based Assignments for Consultants' Services:

> *"The Consultants (i) shall take out and maintain, and shall cause any Sub-consultants to take out and maintain, at their (or the Sub-consultants', as the case may be) own cost but on terms and conditions approved by the Client, insurance against the risks, and for the coverages, as shall be specified in the SC, and (ii) at the Client's request, shall provide evidence to the Client showing that such insurance has been taken out and maintained and that the current premiums therefore have been paid"*

In the case of the above World Bank contract format the special conditions require that:

> *"at the very least (the insurance) be reasonably related to (a) the damage the Consultants might potentially cause to the Client, and (b) the Consultants' ability to pay compensation using their own assets and reasonably obtainable insurance coverage. The Consultants' liability should not be limited to less than (i) the estimated total payments to the Consultants under the Contract for remuneration and reimbursables, or (ii) the proceeds the Consultants may be entitled to receive from any insurance they maintain to cover such liability, whichever of (i) or (ii) is higher. A statement to the effect that the Consultants are liable only for the re-performance of faulty Services is not acceptable to the WB. Also, the Consultants' liability should never be limited for loss or damage caused by the Consultants' gross negligence or wilful misconduct."*

Appendix 3 - ERA Design Consultant Performance Evaluation & Guideline

FOR USE IN THE EVALUATION OF CONSULTANTS UNDERTAKING

FEASIBILITY STUDIES

ENVIRONMENTAL IMPACT ASSESSMENTS

PROJECT DESIGN

ETC.

IT IS NOT INTENDED THAT THIS FORMAT BE USED FOR

CONSTRUCTION SUPERVISION CONSULTANTS.

DESIGN CONSULTANT PERFORMANCE EVALUATION REPORT

[INSERT NAME OF SUPERVISING BRANCH]

Funding Agency Ref No.	Contract Number	District	Project Name and Total length *Project A to B (107Km)*
Consultant Team Leader	Consultant Project Coordinator	Sub-consultant	
Consultant Name and Address		Consultancy Fee Local Currency: Foreign Currency:	
Description of Work Performed by Consultant			
Description of Work Performed by Sub-consultant			
Nature of Consultant's failure to perform (where appropriate)(attach detailed particulars)			
Evaluation Period From To			

CONTRACT DATA

Financier	Date Contract Approved	Original Contract Completion Date	Date Actual Completion

Evaluation

1 = Unsatisfactory 2 = Below Average 4 = Satisfactory 5 = Above Average

Management Review Rating

1 Was the consultant project manger in control of the services provided to ERA? (✓ the appropriate box)

	5	Project manger was always knowledgeable and in control of the Project and provided advice and counsel to ERA that improved ERA's project approach, including but not limited to communication with the public, coordination with local governments, or other project management considerations.
	4	Project manger was routinely knowledgeable and in control of the project and clearly met the ERA's expectations.
	2	Project manger was not routinely knowledgeable and in control and required guidance from ERA to maintain control of the project
	1	Project manger was a detriment to the project
Comments:		

2. Did the consultant communicate adequately with ERA? (✓ the appropriate box)

	5	Consultant always communicated with the Division in a through, concise and timely manner and clearly exceeded the ERA's expectations by identifying problems and helping to define choices faced by ERA.
	4	The consultant routinely communicated with the Division in a through concise and timely manner and clearly met the ERA's expectations.
	2	The consultant did not routinely communicate with ERA in a through concise and timely manner. ERA personnel had to initiate and clarify communications to move project forward.
	1	Communication was lacking and clearly harmed completion of the project.
Comments:		

3. Did the consultant coordinate, actively manage and closely monitor the work of Sub-consultants and various technical disciplines involved in the project? (✓ the appropriate box)

	5	The work was always thoroughly coordinated
	4	The wok was routinely coordinated.
	2	The work was not routinely coordinated. Department personnel identified problems and inconsistencies and directed the consultant to take corrective actions.
	1	Communication was lacking and clearly harmed completion of the project.
Comments:		

4. Was the consultant responsive to requests from ERA, including requests to make minor Changes to the scope of the Contract? (✓ the appropriate box)

	5	The consultant was always responsive and promptly complied with all request
	4	The consultant was routinely responsive and promptly complied with nearly all requests
	2	The consultant was not routinely responsive or was resistant to requests for information minor changes. Repeated involvement of Division personnel was required
	1	The consultant was difficult and harmed project completion
Comments:		

5. Did the consultant assign all the Key Staff to the service in accordance with the contract agreement? (✓ the appropriate box)

	5	All the key staff were assigned, no replacement was requested and their was additional staff assignment from the head office without additional cost
	4	All the key staff were assigned one replacement was requested excepting the Team Leader
	2	All the Key staff were assigned, but later, a replacement for the Team Leader was requested for unjustified reasons and additional staff replacement was requested
	1	The consultant requested replacement for more than 50% of key staff
Comments:		

6. Did the consultant assign appropriate staff to the service? (✓ the appropriate box)

	5	Over 90% of the key staff are knowledgeable to the degree written in their respective CVs and performed their assignment in line with their responsibility assigned to them in the contract
	4	70 – 90%
	2	50 – 70%
	1	Below 50%
Comments:		

7. Availability of key staff for the duration of the service (✓ the appropriate box)

	5	All Key Staff were available for their respective durations
	4	The team leader and other key staff were available at least 95% of the time and other key staff were available at least 85% of the time
	2	The team leader was available for more than 85% of the time and other key staff were available for more than 75% of the time
	1	The Team Leader was available for less than 85% of the time while other key staff was available for less than 75% of the time.
Comments:		

8. General (✓ the appropriate box)

General	5	4	2	1	**Comments**
Willingness to initiate necessary design modification					
Willingness to undertake necessary Design changes					
Quality and time of progress Reports and Arrangement of monthly progress meetings. Was the consultant using the activity follow up form for reporting the progress of the activities?					
Was the consultant responsive to the request of the Division for training of Counterpart Engineers?					
Presentation of the consultant findings on each deliverables					
Comments:					

Timeliness Review Rating

9. Did the consultant meet final contract time requirements? (✓ the appropriate box)

	5	An acceptable final work product was delivered more than 30 calendar days ahead of schedule.
	4	An acceptable final work product was delivered within the scheduled time
	2	An acceptable final work product was delivered up to two months behind schedule.
	1	An acceptable final work product was delivered more than two months behind schedule.
Comments:		

10. Did the consultant meet Draft submittal dates? (✓ the appropriate box)

	5	The consultant provided an acceptable draft standard submittal within the due date for 90 – 100% of draft submittals.
	4	The consultant provided an acceptable draft standard submittal within the due date for 70 – 90% of draft submittals.
	2	The consultant provided an acceptable draft standard submittal within the due date for 50 – 70% of draft submittals.
	1	The consultant provided an acceptable draft standard submittal within the due date for less than 50 of draft submittals.
Comments:		

11. Did the consultant make timely requests for amendments to the scope of service? (✓ the appropriate box)

	5	An acceptable amendment was requested on critical activity (surveying, material investigation or any other activity that can critically affect the design process) more than 30 calendar days ahead of the schedule to carry out the activity on time
	4	An acceptable amendment was requested on critical activity 15 calendar days ahead of the schedule to carry out the activity
	2	Amendment was requested after the activity commenced without significant delay on the service as a whole. Right on time
	1	The consultant took him a significant amount of time to request for amendment and due to this the project suffered
Comments:		

Technical Performance Rating (✓ the appropriate box)

Geotechnical Engineering	1	2	4	5	**Comments**
sampling program for sub-grade and construction material properly designed and Implemented					
Boring and sampling program for Bridge Sites properly designed and Implemented					
Report preparation meets ERA's Site Investigation manual requirements.					
Geotechnical assessment was clearly reflected in the project design and in the preparation of the project specification e.g. in cut slope, high fill embankment design and depth of unsuitable material excavation determination and construction methodology					

Geometric Design and Topographic Surveying	1	2	4	5	
ERA's Geometric Design Manual (GDM) requirements met					
Plan Details are compete and plan preparation meet ERA's standard drawing & GDM requirements					
Exceptions to the standard (Departures) were brought forward with sound justification					
Control Points are well referenced on site					
Interval of Control points are in accordance with the project scope requirement					
All raw survey data are submitted in appropriate format in soft copy.					
Accuracy level of survey data as being verified by ERA was found out satisfactory, not satisfactory and was instructed to resurvey.					
Hydrology / Hydraulics and Structures	1	2	4	5	
Detailed hydraulic assessments of water crossings were made and reflected in the design of the structures.					
Exceptions to the standard (Departures) were brought forward with sound justification					
Procedures in Design of Bridges and other culverts are followed and reported in accordance with the BDM and DDM					
Specification and BOQ and Cost Estimate	1	2	4	5	**Comments**
Project Specification is prepared based on ERA's Standard spec. that meet project requirement					
Substantial Improvements on the Standard Specification is made					
The Item in the BOQ tally with the project specification and Drawings					
Well Organized Book of Computation is submitted that shows the base of estimation for each item along with the BOQ					
Cost estimate Report are based on well documented engineering analysis of Labour, Material and Equipments					
Right of Way Plan Preparation	1	2	4	5	**Comments**
ROW Report preparation meets ERA's requirement and legal description requirements met					
Topography, Right of Way limits, encroached structures, land to be expropriated are established properly.					
For Budgeting purpose, the cost required is estimated based on engineering assessment.					

Quality of Overall Services Delivery Rating (✓ the appropriate box)

General	1 U	2 B	4 S	5 F	**Comments**
Was work well Organized, Properly Presented and Clear?					
Were errors or Omission, numerous, Serious, significant or costly?					
Was quality control plan in effect and is there evidence it was followed					
Were studies and reports, complete and accurate? This includes surveys, quantities and estimates and special provisions.					
Were the overall services delivered in a professional manner according to good working practice?					
Were all deliverables provided in accordance with the contract programme?					
Were data collection, its analysis and application to design solutions technically sound and in line with accepted best practices?					

Overall Performance of the consultant

Would you have reservations selecting this firm again for this type of project?

Describe weakness/ Strengths and provide suggestions for improvement

Will this report be considered i.t.o Proclamation 430/2005 w.r.t "failure to fulfil obligations under the contract", if so has the report been seen by the Consultant and their response attached to this document as Appendix 1.

YES ☐ **NO** ☐

Filled by:

Project Counterpart Engineer:

Name---------- Signature----------Date ----------

Checked by:

Branch Head:

Name ---------- Signature ----------Date ----------

Authorized by:

Division Manager:

Name----------Signature----------Date----------

Approved by:

Engineering and Regulatory Department Deputy Director General:

Name----------Signature----------Date----------

Appendix 1 - Consultants Response to the Performance Evaluation

Guide to the ERA Design Consultant Performance Evaluation Report

The ERA format is more self explanatory than that of IDA format in Appendix 5 below. The explanations, recommendations and comments below have therefore been limited to only those items which are not self explanatory or which could be misunderstood.

Item No.	Description	Comment
	Funding Agency Ref No	*[Insert the IDA Grant or Credit number. In the case of the RSDP this is HO49-ET]*
	Work Performed by Consultant	*[Insert a concise description of the project as well as more comprehensive details of that aspect of the work in which the consultant failed to perform (if this is the case)]*
	Work Performed by Sub-consultant	*[Insert a concise description of the project as well as more comprehensive details of that aspect of the work in which the Sub-consultant failed to perform (if this is the case)]*
	Nature of failure	*[Insert detailed particulars of the failure to perform supported by concrete facts and evidence]*
	Evaluation Period	*[Insert the beginning and end dates of the period of evaluation. This may be the entire contract period or any other period during the contract which may be relevant to a failure to perform]*
1 to 11	Management Review Rating & Timeliness Review Ratings	In the case of scores of 4 or 5 the comment should reflect the positive effect of the consultant's performance on the project and in the case of scores of 1 or 2 comprehensive details of the failure to perform as well as the negative effect of that failure should be provided.
	Technical Performance and Quality of Work Ratings	In the case of scores of 4 or 5 the comment should reflect the positive effect of the consultant's performance on the project and in the case of scores of 1 or 2 comprehensive details of the failure to perform as well as the negative effect of that failure should be provided.
	To be considered i.t.o Proclamation 430/2005	In the event that this is a "negative" report and it is to be used in support of a request to "Debar" the consultant it will be necessary to send the report to the Consultant in order to obtain its comment. Once received, this comment must be included with this Evaluation Report

Appendix 4 - ERA Supervision Consultant Performance Evaluation & Guideline

FOR USE IN THE EVALUATION OF CONSULTANTS UNDERTAKING

CONSTRUCTION SUPERVISION

IT IS NOT INTENDED THAT THIS FORMAT BE USED FOR

FEASIBILITY STUDIES

ENVIRONMENTAL IMPACT ASSESSMENTS

PROJECT DESIGN

ETC.

SUPERVISION CONSULTANT PERFORMANCE EVALUATION REPORT

[INSERT NAME OF SUPERVISING BRANCH]

Funding Agency Ref No.	Contract Number	District	Project Name and Total length *Project A to B (107Km)*
Consultant Team Leader	Consultant Project Coordinator	Sub-consultant	
Consultant Name and Address		Consultancy Fee Local Currency: Foreign Currency:	
Description of Work Performed by Consultant			
Description of Work Performed by Sub-consultant			
Nature of Consultant's failure to perform (where appropriate)(attach detailed particulars)			
Evaluation Period From To			

CONTRACT DATA

Financier	Date Contract Approved	Original Contract Completion Date	Date Actual Completion

Evaluation

1 = Unsatisfactory 2 = Below Average 4 = Satisfactory 5 = Above Average

Management Review Rating

1. Was the consultant project manger in control of the services provided to ERA? (✓ the appropriate box)

	5	Project manger was always knowledgeable and in control of the Project and provided advice and counsel to ERA that improved ERA's project approach, including but not limited to communication with the public, coordination with local governments, or other project management considerations.
	4	Project manger was routinely knowledgeable and in control of the project and clearly met the ERA's expectations.
	2	Project manger was not routinely knowledgeable and in control and required guidance from ERA to maintain control of the project
	1	Project manger was a detriment to the project
Comments:		

2. Did the consultant communicate adequately with ERA? (✓ the appropriate box)

	5	Consultant always communicated with the Division in a through, concise and timely manner and clearly exceeded the ERA's expectations by identifying problems and helping to define choices faced by ERA.
	4	The consultant routinely communicated with the Division in a through concise and timely manner and clearly met the ERA's expectations.
	2	The consultant did not routinely communicate with ERA in a through concise and timely manner. ERA personnel had to initiate and clarify communications to move project forward.
	1	Communication was lacking and clearly harmed completion of the project.
Comments:		

3. Did the consultant coordinate, actively manage and closely monitor the work of Sub-consultants and various technical disciplines involved in the project? (✓ the appropriate box)

	5	The work was always thoroughly coordinated
	4	The wok was routinely coordinated.
	2	The work was not routinely coordinated. Department personnel identified problems and inconsistencies and directed the consultant to take corrective actions.
	1	Communication was lacking and clearly harmed completion of the project.
Comments:		

4. Was the consultant responsive to requests from ERA, including requests to make minor Changes to the scope of the Contract? (✓ the appropriate box)

	5	The consultant was always responsive and promptly complied with all request
	4	The consultant was routinely responsive and promptly complied with nearly all requests
	2	The consultant was not routinely responsive or was resistant to requests for information minor changes. Repeated involvement of Division personnel was required
	1	The consultant was difficult and harmed project completion
Comments:		

5. Did the consultant assign all the Key Staff to the service in accordance with the contract agreement? (✓ the appropriate box)

	5	All the key staff were assigned, no replacement was requested and their was additional staff assignment from the head office without additional cost
	4	All the key staff were assigned one replacement was requested excepting the Team Leader
	2	All the Key staff were assigned, but later, a replacement for the Team Leader was requested for unjustified reasons and additional staff replacement was requested
	1	The consultant requested replacement for more than 50% of key staff
Comments:		

6. Did the consultant assign appropriate staff to the service? (✓ the appropriate box)

	5	Over 90% of the key staff are knowledgeable to the degree written in their respective CVs and performed their assignment in line with their responsibility assigned to them in the contract
	4	70 – 90%
	2	50 – 70%
	1	Below 50%
Comments:		

7. Availability of key staff for the duration of the service (✓ the appropriate box)

	5	All Key Staff were available for their respective durations
	4	The team leader and other key staff were available at least 95% of the time and other key staff were available at least 85% of the time
	2	The team leader was available for more than 85% of the time and other key staff were available for more than 75% of the time
	1	The Team Leader was available for less than 85% of the time while other key staff was available for less than 75% of the time.
Comments:		

8. General (✓ the appropriate box)

General	5	4	2	1	**Comments**
Willingness to take a proactive role in the project's management					
Willingness to accommodate reasonable alternative proposals					
Quality and time of progress Reports and Arrangement of monthly progress meetings. Was the consultant using the activity follow up form for reporting the progress of the activities?					
Was the consultant responsive to the request of the Division for training of Counterpart Engineers?					
Presentation of the consultant's findings on each issue/claim					
Comments:					

Timeliness Review Rating

9. Did the consultant monitor the contract implementation programme? (✓ the appropriate box)

	5	The Consultant fully understood and managed the implementation programme.
	4	The Consultant fully understood but did not manage the implementation programme adequately
	2	The Consultant had a grasp of the programme but was not proactive in its management
	1	The Consultant had little understanding of the implementation programme
Comments:		

10. Did the consultant adhere to contract specified reaction times? (✓ the appropriate box)

	5	The consultant responded within the due dates for in 90 – 100% of the cases.
	4	The consultant responded within the due dates for in 70 – 90% of the cases.
	2	The consultant responded within the due dates for in 50 – 70% of the cases.
	1	The consultant responded within the due dates for less than 50% of the cases.
Comments:		

11. Did the consultant maintain proper financial control? (✓ the appropriate box)

	5	The Consultant always maintained an accurate final contract estimate and maintained the expenditure within budget.
	4	The Consultant produced a final estimate when requested to do so.
	2	The Consultant only advised ERA of over expenditure after the event.
	1	The consultant had no notion of financial control and exceeded the contract budget
Comments:		

Technical Performance Rating (✓ the appropriate box)

Geotechnical Engineering	1	2	4	5	**Comments**
Identification and confirmation of acceptability of material was effected without delay					
Resolution of founding problems were effected without delay					
Design revisions resulting from founding conditions were adequately and timeously presented to ERA					
Testing for approval was effected without delay to the programme					

Geometric Design and Topographic Surveying	1	2	4	5	
Required modifications to Geometric Design were timeously effected within the contract budget					
Plan Details are compete and plan preparation meet ERA's standard drawing & GDM requirements					
Exceptions to the standard (Departures) were brought forward with sound justification					
Control Points are well referenced on site					
Interval of Control points are in accordance with the project scope requirement					
All raw survey data are submitted in appropriate format in soft copy.					
Accuracy level of survey data as being verified by ERA was found out satisfactory, not satisfactory and was instructed to resurvey.					
Hydrology / Hydraulics and Structures	1	2	4	5	
The Consultant responded quickly and effectively to identified problems					
Exceptions to the standard (Departures) were brought forward with sound justification					
Structural supervision was adequate to ensure compliance with the specifications					

Specification and BOQ and Cost Estimate	1	2	4	5	**Comments**
Disputes resulting from the (lack of) specification were efficiently and effectively resolved					
Measurement of work done was clearly recorded and the records maintained up to date at all times					
New rates and items were agreed to without undue delay					
Well Organized final account was submitted supported by full calculations for each item of the BoQ.					
Cost estimate Reports were based on well documented engineering analysis of Labour, Material and Equipments					
Claims Analysis and Resolution	1	2	4	5	**Comments**
The Consultant took a proactive approach to the avoidance and resolution of claims					
The Consultant maintained a pragmatic approach to the resolution of claims					
The Consultants' record keeping assisted the evaluation and resolution of claims.					

Quality of Overall Services Delivery Rating (✓ the appropriate box)

General	1 U	2 B	4 S	5 F	**Comments**
Was work well Organized, Properly Presented and Clear?					
Were errors or Omission, numerous, Serious, significant or costly?					
Was quality control plan in effect and is there evidence it was followed					
Were studies and reports, complete and accurate? This includes surveys, quantities and estimates, design revisions and claims.					
Were the overall services delivered in a professional manner according to good working practice?					
Were all deliverables provided in accordance with the contract programme?					
Were data collection, its analysis and application to design solutions technically sound and in line with accepted best practices?					

Overall Performance of the consultant

Would you have reservations selecting this firm again for this type of project?

Describe weakness/ Strengths and provide suggestions for improvement

Will this report be considered i.t.o Proclamation 430/2005 w.r.t "failure to fulfil obligations under the contract", if so has the report been seen by the Consultant and their response attached to this document as Appendix 1.

YES ☐ **NO** ☐

Filled by:

Project Counterpart Engineer:

Name---------- Signature----------Date ----------

Checked by:

Branch Head:

Name ---------- Signature ----------Date ----------

Authorized by:

Division Manager:

Name----------Signature----------Date----------

Approved by:

Engineering and Regulatory Department Deputy Director General:

Name----------Signature----------Date----------

Appendix 1 - Consultant's Response to the Performance Evaluation

Guide to the ERA Supervision Consultant Performance Evaluation Report

The ERA format is more self explanatory than that of IDA format in Appendix 5 below. The explanations, recommendations and comments below have therefore been limited to only those items which are not self explanatory or which could be misunderstood.

Item No.	Description	Comment
	Funding Agency Ref No	*[Insert the IDA Grant or Credit number. In the case of the RSDP this is HO49-ET]*
	Work Performed by Consultant	*[Insert a concise description of the project as well as more comprehensive details of that aspect of the work in which the consultant failed to perform (if this is the case)]*
	Work Performed by Sub-consultant	*[Insert a concise description of the project as well as more comprehensive details of that aspect of the work in which the Sub-consultant failed to perform (if this is the case)]*
	Nature of failure	*[Insert detailed particulars of the failure to perform supported by concrete facts and evidence]*
	Evaluation Period	*[Insert the beginning and end dates of the period of evaluation. This may be the entire contract period or any other period during the contract which may be relevant to a failure to perform]*
1 to 11	Management Review Rating & Timeliness Review Ratings	In the case of scores of 4 or 5 the comment should reflect the positive effect of the consultant's performance on the project and in the case of scores of 1 or 2 comprehensive details of the failure to perform as well as the negative effect of that failure should be provided.
	Technical Performance and Quality of Work Ratings	In the case of scores of 4 or 5 the comment should reflect the positive effect of the consultant's performance on the project and in the case of scores of 1 or 2 comprehensive details of the failure to perform as well as the negative effect of that failure should be provided.
	To be considered i.t.o Proclamation 430/2005	In the event that this is a "negative" report and it is to be used in support of a request to "Debar" the consultant it will be necessary to send the report to the Consultant in order to obtain its comment. Once received, this comment must be included with this Evaluation Report

Appendix 5 - WB Consultant Performance Evaluation

Annex 9.

Form for Performance Evaluation

an extract from

Consulting

Services

Manual

A Comprehensive Guide to Selection of Consultants

THE WORLD BANK

Washington, D.C.

Form for Performance Evaluation[10]

1. Loan, Credit, or Grant No.	2. Borrower (Client)
3. Project Name	
4. Consulting Firm's Name, Nationality[11] and Address	
5. Participating Firms (for Associations)12 (a) ..... (b) ..... (c)	
6. Description of Services (brief, less than a quarter of a page)	
7. Contract Date13	8. Completion Date 0 (Actual)14
9. Original Contract Amount (Approx. in US$)	10. Final Contract Amount (Approx. in US$)
11. Evaluation, based on (a) your own knowledge, (b) a review of the records, and (c) discussions with borrower and Bank staff. (See next page for details) **Score**	
Rating 5 Outstanding 4 Good 3 Adequate 2 Marginally adequate 1 Unsatisfactory	
Explanation of Above Score (Use additional sheets, if necessary)	

Name of ERA's responsible officer	Signature	Unit's Name	Date
ERA Senior Manager's Name	Signature	Unit's Name	Date

[10] The information provided in the following table is confidential. It should be kept in a secure location by the
Bank's Central Procurement Unit.

[11] The firm's nationality is that of the country where it is registered. The nationality of a joint venture is that of the lead partner.

[12] Associations can be in the form of a sub-consultancy or a joint venture. The Bank does not accept consortiums unless the agreement includes a clear definition of the members' liabilities.

[13] Signature date

[14] As agreed per contract, amendment to contract, or agreement in writing between the client and the consultant

Consultant Performance Evaluation[15]

Evaluation Checklist

1. The approach below may be used as a guide to evaluating performance. The checklist should be used for each firm.

General Background

2. Before consultant's appointment:

   a) What was (were) the justification(s) for appointing the consultant?

   b) Did the Borrower and the Bank agree on the role of the consultant?

   c) What role did the Bank play in assisting the Borrower (for example, through participation in the preparation of the terms of reference)?

3. During consultant's performance:

   a) What events were connected with the services of the consultant?

   b) What actions should be avoided or repeated in similar future projects?

   c) What was the quality of supervision of the consultant by the Borrower?

   d) Did the Bank bring to the attention of the Borrower and the firm the deficiencies in the performance of the consultant? What was the response?

Typical Factors Assessed

4. Technical performance criteria:

   a) Appropriateness of recommendations and solutions, and of cost-effectiveness
   b) Applicability to the country and agency conditions; reliability, sustainability and ease of implementation
   c) Flexibility and adaptability to changes.
   d) Cost estimate reliability
   e) Frequency of design changes.
   f) Technology transfer.

5. Managerial Criteria:

   a) Communications effectiveness.
   b) Cultural adaptation
   c) Organization and execution of tasks.
   d) Quality of staff assigned.
   e) General cooperation and responsiveness, adherence to commitments.
   f) Quality of relationships with implementing agency, suppliers and contractors, other government agencies, funding agencies and so forth.
   g) Training.

6. Overall Criteria

   a) Timeliness of performance
   b) Adherence to budget.
   c) Professional conduct

---

[15] Note that this format is actually intended for the Bank's own evaluation of Consultants.

Guide to WB's Form of Performance Evaluation

This Form is actually intended for completion by WB at Implementation Completion Report (ICR) stage. It is suggested that the use of this same format for the submission of ERA's consultant performance evaluation will facilitate the inclusion of ERA's findings, by the Bank, in its ICR and thereby facilitate the decision to debar where necessary.

The following explanations, suggestions and comments are provided to facilitate the completion of the WB Form for Performance Evaluation.

Item No.	Description	Comment
1	Loan, Credit, or Grant No.	This reference number may be obtained from the Financial Agreement between GoE and WB. In the case of RSDP II the reference is P082998 APL No 1 Grant No: H049-ET
2	Borrower	Government of Ethiopia via Ethiopian Roads Authority
3	Project Name	Road Sector Development Support Program *[Insert the individual project's abbreviated name as referred to by WB e.g. Rehabilitation of A to B Road]*
4	Consulting Firm's Name, Nationality and Address	*[Insert the name and address of the Consulting firm as it appears on their signed contract document]* The nationality of the firm is that of the country where it is registered and in the case of a joint venture is that of the country of the lead partner.
5	Participating Firms	Where the Consultant is comprised of more than one firm the names of all of the firms should be detailed. Associations can be in the form of sub-consultancy or joint venture agreements. The Bank does not accept consortia unless the agreement includes a clear definition of the members' liabilities
6	Description of Services	*[Insert the short (less than a quarter of a page) description of the project as contained in the ToR]*
7	Contract Date	*[Insert the date of signature of the Contract]*
8	Completion Date	*[Insert the date as agreed per contract, amendment to the contract or agreement in writing between ERA and the consultant]*
9	Original Contract Amount	*[Insert the approximate value in USD as reflected in the contract document]*
10	Final Contract Amount	*[Insert the approximate value in USD of the contract on completion]*
11	Evaluation	The information provided under this section is the most important w.r.t the debarring of a consultant from participation in future ERA projects. It is therefore suggested that ERA's own Performance Evaluation Report format and supporting information be annexed to this report in support of the information required by the WB Evaluation Checklist (see Evaluation Checklist Guide below)
	Score	*[Insert a score of between 1 and 5 to describe your evaluation of the consultant's performance].*
	Explanation of Score	The score assigned above is a measure of ERA's factual evaluation presented in 11 above. *[Insert and explanation of why the Evaluation warrants the assigned score]*
	Name of ERA's Responsible Officer	*[Insert the name and position of the person responsible for the preparation of this report]*
	Units Name	*[Insert the name of the Branch or Division preparing the report]*
	ERA Senior Manager's Name	*[Insert the name of the ERA Senior Manager responsible for the submission of the report to WB]*

Guide to Evaluation Checklist (see 11 in schedule above)

Item No.		Description	Comment
1		The topics below are provided as a guide to the topics to be considered in evaluating the performance of a consultant.	
		General Background	
2		Before Appointment	
	a	Justifications for appointment	Explain why it was necessary to appoint a consultant in general and this consultant in particular
	b	Did ERA and WB agree on the role	If there was any disagreement between WB and ERA with regard to the role to be played by the consultant details should be provided
	c	What role did the Bank play in assisting ERA	If WB was in any way involved in the definition of the ToR and or procurement of the consultant details should be provided.
3		During the Contract	
	a	Events connected	If any events (good or bad) connected with the services provided by the Consultant occurred during the implementation of the project, details should be provided. These would be events with a material effect on the outcome of the project.
	b	Lessons learned	Provide details of the lessons (good and bad) which can be learned from the project and the consultant's services as provided.
	c	Quality of ERA supervision	Provide an honest estimation of the quality of supervision of the consultant by ERA i.e. did it facilitate the successful implementation of the project.
	d	Did Bank draw attention to poor performance	In the event of poor performance did WB draw either ERA or the consultant's attention to it and if so, what was the response. (If this response does not already form part of the ERA evaluation it should be included here or referred to)
		Typical Factors Assessed	
4		Technical Performance	
	a	Appropriateness of solutions	How appropriate and cost effective were the consultant's recommendations and solutions to the problems which arose during the project.
	b	Applicability of solutions	Were the proposed recommendations and solutions applicable to Ethiopia and ERA and were they sustainable and easy to implement.
	c	Flexibility to changes	Comment on the consultant's willingness to accommodate and accept ERA's changes and requirements.
	d	Reliability of Cost estimate	How accurate and reliable was the consultant's cost estimate(s)
	e	Frequency of Design Changes	In the event that there were design changes, provide details of the frequency of and reasons for such changes.
	f	Technology Transfer	In the event that the Consultant was required to Transfer Technology to ERA provide details on the effectiveness of such transfer
	a	Timeliness of Performance	Detail the consultants adherence to the contract's implementation programme
	b	Adherence to budget	Detail the consultant's adherence to the contract's budget
	c	Professional conduct	Was the consultant's conduct professional? If not detail what aspects of their conduct were considered to be unprofessional and why.

Item No.		Description	Comment
5		Managerial Criteria	
	a	Communications Effectiveness	Provide details on the effectiveness of communications between the consultant's Management and ERA and in the event of ineffectiveness how this impacted on the project.
	b	Cultural Adaptation	Provide details on how effectively the consultant adapted to the culture of Ethiopia in it dealings with ERA and other project stakeholders and in the event that this was ineffective how this impacted on the project
	c	Organisation and execution of tasks	Provide details of the consultant's management's organisation and execution of the project's various tasks and in the event that these were poor how this impacted on the project.
	d	Quality of staff	Detail any shortcomings of the management assigned to the project and any anomalies between CVs and performance. Was the manager assigned appropriate and capable?
	e	Cooperation and adherence to commitments	Detail the level of cooperation of the manager with ERA and the level of responsiveness of the manager to ERA's requests. Detail any failure to honour commitments
	f	Quality of Relationships	Comment on the perceived quality of relationships between the Consultant and all other stakeholders
	g	Training	In the event that training forms a part of the consultancy, detail the nature and effectiveness of the training
6		Overall Criteria	The information reflected below should be for the project as a whole during the complete contract period
	a	Timeliness of Performance	Detail the consultants adherence to the contract's implementation programme
	b	Adherence to budget	Detail the consultant's adherence to the contract's budget
	c	Professional conduct	Was the consultant's conduct professional? If not detail what aspects of their conduct were considered to be unprofessional and why.

Appendix 6 - Evaluation Report Letter of Transmittal

GoE Funding	***Foreign Funding***
To: The Public Procuring Agency Somewhere Addis Ababa	To: The Funding Agency P O Box X Somewhere Else

Re: Design/Supervision of A to B Road Project.

Subject: Consultant Company
Performance Evaluation Report

Dear Sir In terms of Proclamation 430/2005 it is our opinion, as supported by the attached Performance Evaluation Report that this consultant has "failed to fulfil its obligations under its contract". We wish to express our dissatisfaction with the Consultant's performance as detailed in the attached report and request that consideration be given to including this Consultant on the list of debarred suppliers of consultancy services. Yours faithfully ERA	Dear Sir In terms of our Loan Agreement referenced ??, we attach for your information, records and action our Performance Evaluation Report. We are of the opinion that the Consultant failed to fulfil its obligations under the contract. We wish to express our dissatisfaction with the Consultant's performance as detailed in the attached report and request that consideration be given to barring this consultant from undertaking future work for ERA. Yours faithfully ERA

Appendix 7-19 - Guideline CA11 Communications and Meetings

GUIDELINE N° CA11

Ethiopian Roads Authority

Guideline N° CA11

Communications and Meetings

Contract Administration Manual

December 1999
Rev November 2006

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
ETHIOPIAN ROADS AUTHORITY
CONTRACT ADMINISTRATION DIVISION

COMMUNICATIONS AND MEETINGS

May 2000

CONTENTS

1.0 COMMUNICATIONS - GENERAL

The functions of management could be put into two general classes:

- Planning and thought
- Action taking

Although this may be an over simplification it may be adequate for the purposes of this guideline.

Consider these functions of management:

- Planning
- Organising
- Commanding
- Co-ordinating
- Controlling

Actions which would help with these management functions:

- Setting objectives
- Organising work
- Motivating employees
- Measuring performance

In addition there are other functions:

- Authority
- Communications
- Control
- Delegation
- Discipline
- Employment legislation
- Management by objectives
- Manpower analysis and planning
- Motivation
- Personnel management
- Recruitment
- Salaries

Each of the above functions and actions, except possibly "Planning" and "Setting objectives" require communications with other members of staff for the function to be able to commence, never mind reach conclusions and actions.

Poor communications result in:

- lack of information
- misinformation
- misunderstandings
- lack of action
- adverse actions

The list could be very much longer, and they all slow down the project and usually cost money.

Good communications:

- aid decision making
- ensure all employees are aware of what is expected of them.
- ensure the effective operation of systems used by an organisation.

It is essential for organisations to be effective in their communications. One of the most important functions in the making of a good manager is his skill at communicating.

2.0 WAYS OF COMMUNICATING

- Pictures or diagrams, not necessarily with words
- Written word
- Word of mouth

2.1 Pictures or Diagrams

Formal working drawings, site sketches, informal diagrams are all communications by diagram, forming a picture as to what has to be built, what has been built or how the work should proceed.

In modern communications almost all our communications use words, but there is still a place for illustrations, without words. Technical diagrams written in one language can still be read and understood by a technical person without understanding the language. But this can have drawbacks. For instance, notices warning of essential procedures may not be understood and problems could result.

Many technical TV and video presentations do not depend on words so much as diagrams and sequences, say of construction equipment in action. However, modern artistic techniques are often very useful when developed into technical instructions. For instance the diagrams used in instruction manuals for domestic products such as cameras and video recorders demonstrate good and bad practice with ✓'S and ×'s. These diagrams can be developed to illustrate correct procedures for many items of work, and are often used in the control of heavy vehicles and construction equipment by illuminated signs denoting engine and machinery function etc.

2.2 Written Word

This method of communication covers so many avenues as to how information can be communicated.

2.2.1 Computers

- hard drive and memories
- e- mail
- floppy
- CD disc

2.2.2 Media

- Newspapers
- Technical journals

2.2.3 Contract and other technical documents

- QA contract documents
- site instructions
- variations
- method statements
- programmes – these are often also illustrative
- technical reports
- government papers
- letters
- memos record forms & certificates
- site memos
- site inspection sheets
- Daywork sheets
- statements for payment by the contractor
- taking over certificates
- defects liability certificate

All these methods of communication by written word are well known.

2.3 Word of Mouth

This is the most commonly used way of communicating. It includes:

2.3.1 Gossip
- casual discussions
- story telling

2.3.2 Informal Talk
- informal discussions
- informal interviews

2.3.3 Formal Discussion
- public addresses
- lectures
- seminars
- formal interviews
- formal meetings,

2.3.4 Electronic Media
- radio,
- TV and video
- telephone and mobile phones

2.4 Gossip

A good manager may listen to gossip (if the time and place is appropriate), even malicious gossip, as it can be as revealing about the speaker as the subject of conversation. It may not always be malicious, it may not always be true.

The manager has to sift out the truth or the important parts of the conversation that may need action. Malicious gossip, however, is always something about which a manager should take positive action, even if that means deciding **not** to take action. Gossip or story telling can lead to innocent people being hurt. 'Mud sticks' and once thrown cannot be taken back. In the work place it can often be the case of one-upmanship.

2.4.1 Informal talk

Informal talk includes the sort of conversations that occur when one casually meets a friend or acquaintance. Nothing is pre-planned, it is all casual, but it may be important.

In an office it could be the sort of discussion that arises when a manager leaves his own desk or office, tours his section and talks casually with individuals under his control. Outside his office area informal discussion can arise over say a drawing board or as coffee is served and these are always useful for the manager to know his staff and for them to know him, as well as the raising of issues that may affect the project or contract.

Within his own office area talk will probably be more formal except with senior members of his staff. More formal matters are things such as interviews, or when the staff member asks to discuss his progress and/or workload (but may actually be seeking to discuss his salary!)

On site it may be more casual, a polite 'good morning' from the manager, whether he is the RE or the Contractor's Agent, can improve relations. It may not, however, as some unskilled workers are embarrassed to be spoken to, but this is a matter for the manager and how he conducts himself. He must be able to judge the mood of the workplace, and informal talk is one way he can develop this part of his responsibility.

For instance a worker may say 'there's more water in the excavation now than there was." This could be a serious matter, e.g. a leak in a structure, movement of the ground. Hopefully the manager is aware of the true situation or if not he should be able to decide whether:

- the speaker is correct in his assertion
- being mischievous
- malicious
- foolish
- merely making words.

It is also worth mentioning that a manager should always be careful to greet his own staff first when going on site. It may be more useful to speak to the Contractor's Agent or consultant first, instead of his own representative, but he may damage the relationship with his own staff if he does not observe this rule.

Casual interviews can develop into more serious issues and the manager (if he can) should make brief notes of the discussion for action and future reference. It is a fact that most of the big formal issues which are included in the itinerary of the formal meetings will have been discussed, often informally, before being raised officially.

Informal discussion and talk are cheap, providing they are not hot air, or overtake the real down to earth hard work. Even then when the hot air cools perhaps a serious topic has been revealed. Some managers make the mistake of creating a climate where less confident or shy members of staff do not speak their mind, afraid of ridicule, that 'the Boss' or colleagues will think they are foolish or inexperienced.

Many discussions have had successful outcomes with someone saying "…that is the most ridiculous suggestion I have heard …" and then some one saying " Yes, but wait a minute, maybe it isn't so foolish, now what if we ----?", and a solution is found.

"Think tanks" are as much at home in a small contractor or consultant's office as in the major offices of a government. It is how the thoughts are actioned which counts and that is the manager's responsibility.

The manager should be careful about rebuking a member of his own staff for not keeping him informed of an incident, and he should not do this in front of other people. His staff member may not know about the incident, for lots of sound reasons. Derision and put downs are counter productive no matter where and how they are raised or by whom. Unfortunately they can be more frequent than positive suggestions in many organisations.

2.4.2 Formal Discussion

Formal discussions generally occur at meetings which are arranged before hand. They are not spontaneous, but arranged along the following lines:

- they are held at a certain time and place known beforehand,
- they would always have a chairman and an agenda, preferably known beforehand,
- the list of participants expected to attend would be known.

However, there is the case where a casual meeting in a manager's office on one subject can develop into an informal discussion on another, which eventually requires formal actions e.g. a letter confirming the discussion and agreements/instructions.

3.0 TYPES OF MEETINGS

Meetings can be of several types:-

3.1 Mass meetings

Mass meetings can often be politically motivated. They generally consist of one or more speakers addressing a crowd, generally without meaningful discussion. An example of this type of meeting in the ERA context would be the General Manager calling a meeting of all staff to explain why there will be no pay rises this year!

3.2 Communicator meetings and briefings

True communicator's meetings usually consist of minimal discussion, normally briefing meetings with only a small amount of explanation of difficult points. For instance:-

- Government announcements to the press, war, crises etc.
- a Contractor informing the Engineer of his financial situation.
- an Employer informing the Contractor of a change in political situation which might affect the contract.

3.3 Lectures

Lectures could be training sessions with one or more speakers, with the participants asking questions to which a reply is given.

3.4 Seminars

Seminars are formal meetings, to spread knowledge and expertise. Generally the subjects are specialised. The participants should attend to hear what the speaker has to say and express their opinions on the subject and the speaker's views. Sometimes the participants can allow the seminar to deteriorate into a lecture.

Ideally seminars present an expert's comments or views for discussion by all participants.

3.5 Interviews

These are generally on a one to one basis, but sometimes may consist of more than one participant on each side, say:

- an interview for a job, by an individual
- to discuss a contractors submission at prequalification, or
- during the review of a tender, the estimator might attend with one colleague, to explain some points

3.6 Formal meetings

Formal meetings may be private and are usually arranged in advance. They are not spontaneous but arranged formally along the following lines:

- they are held at a certain time and place known beforehand
- they should always have a chairman and an agenda known beforehand
- the list of participants expected to attend would be known
- apologies would be expected for those who did not attend
- minutes would be taken to be agreed at the meeting or at the next formal meeting
- socialising ought to be kept to either before or after the meeting

Sometimes in emergencies, meetings have to be held at short notice. It is then up to the person calling the meeting to ensure that he and his staff fulfil the actions given above, as if there had been adequate notice, given the short time for preparation. The chairman may have to brief participants at the actual meeting.

A hurried meeting, not well organised can be a waste of time in a crisis, taking staff into a meeting for reasons such as merely informing the senior management of the situation may not improve matters. Management should be attending to the crisis and above all assessing the situation, until the crisis is over.

4.0 TYPES OF FORMAL MEETINGS

4.1 Internal meetings attended by the Engineer

Internal meetings held amongst Consultants staff:

- Directors / Partners meeting on all aspects affecting the company
- Contract administration including contract queries, claims etc.
- Accountancy
- Personnel
- Administration
- Technical matters and research
- Design section at various levels, with or without Director/Partner
- Engineer with staff at various levels to discuss general matters
- Directors/Partners from HO meeting the Engineer, the RE and his site staff to discuss the Project
- The RE meeting all Section RE's
- Section RE's holding meetings with staff in their section
- Technical meetings to explain matters such as QA to all site staff

4.2 Internal meetings attended by the Contractor

Internal meetings held amongst Contractors staff:

- Directors meetings on all subjects affecting the Company
- Contract administration
- Accountancy
- Personnel
- Administration
- Technical matters and research
- Market Research
- Directors from HO meeting the Agent and his site staff to discuss the Project
- The Agent meeting Section Engineers to discuss construction matters/progress
- Section engineers holding meetings with staff in their sections
- General meetings held amongst Contractors staff e.g. site closedowns.

4.3 External meetings for the Engineer's and the Contractor's senior staff

A joint meeting between the Contractor and Consultant, usually on a monthly basis, often attended by the Employer’s Representative. These meetings discuss:

- Progress
- Programme and/or Delays
- Finance i.e. certificates, variations, claims
- Hand overs & take overs
- Sub contractors and supplier’s matters
- Contractual matters of concern to the parties to the contract
- Technical problems and/or information required
- Economic or political problems of the Employer's country

4.4 External meetings attended by Engineer's staff

- With the Employer to advise, inform, request permission or approval.
- Technical meetings with the Contractor
- Design matters with designer or Employer
- Contract experts
- Claims experts
- Specialist suppliers
- Firms or individuals with technical expertise for the design of special work, special processes etc.
- Subcontractors/ associates for design
- Nominated or Specialist sub contractors
- Labour representatives of the people
- Local Authorities
- Statutory Authorities
- Government Departments i.e. Tax, Labour Office etc

4.5 External meetings attended by Contractor's staff

- Technical meetings with the Engineer (Engineer's Representative)
- Suppliers, specialist suppliers
- Firms or individuals with technical expertise for the design of temporary works, special processes etc.
- Subcontractors
- Equipment agents and suppliers, hire companies
- Labour representatives other than trade union's
- Local Authorities
- Local people
- Statutory Authorities
- Government Departments -Tax, Labour Office etc.

5.0 TYPES OF MEETINGS ATTENDED BY THE EMPLOYER

5.1 Internal Meetings

The meetings held within the Contract Administration Division apply equally as to whether projects are at design or construction stage. This section assumes that the Division is divided into sections or teams beneath the Branch Head with a team leader or section head in charge of each team. They comprise:

5.1.1 Weekly Team meetings

Held with team leader/section head and members of staff working on projects for which he/she is directly responsible. Progress on each team member's job is discussed as are any problems arising during the week. It is a reporting session when team members can also become familiar with other team member's projects, so that in the event of illness or leave another member of the team can be designated by the team leader or section head to look after the job.

5.1.2 Meetings between Team Leader(s) and Branch Head

These may also be weekly or preferably fortnightly and are held to appraise the Branch Head of how his team leaders/section heads are progressing and to find out if they have any problems on their projects which may require the Branch Head's involvement. Occasionally the Branch Head may organise a meeting with the section head/team leader and his team.

5.1.3 Branch Heads and Division Manager

These meetings will tend to be policy meetings and would normally be held monthly. The Division Manager would normally require progress reports from the Branch Heads on all projects for which they are responsible. He may consider that a particular project is either not going well or is falling behind programme and action is required from the Branch Head to rectify the situation. New projects would be discussed here and the Branch Head would have to include these into his work programme for the Branch. Potential or advised claims from either consultants or contractors could be raised at this meeting.

5.1.4 Division Manager and DGM and/or General Manager

Again monthly policy meetings where the workload of the Division is established for the coming month. Here the Division Manager should advise the DGM and GM of any particular problems on a project or within the Division and brief both on how the projects are proceeding, in case the GM has to report to the Board or press on a particular matter.

At this meeting the Division Manager would relay any likely cost implications on projects, due to claims for additional money, to his senior managers.

No-one attends more than two of the above meetings – one above and one below the level of his managerial status.

5.2 Series of Meetings

A typical series of meetings from Project inception through to completion that the Employer will be involved in is included below.

Pre-design	*Design*	*Tender/Evaluation*	*Construction*
Project identification Project inception agreement	Design team (if multi-discipline) Client/consultant	Pre-tender/proposal Tender/proposal opening	Pre-contract Internal with employer's representative on site
Agreement of TOR for consultants Consultant selection		Evaluation committee Clarification/Negotiation Contract Award Committee Contract Signing	Progress with consultant/contractor Technical or financial with either consultant or contractor (not really advised as consultant should be in attendance).
Note: These may be internal or involve participants from funding agencies, government departments.		Note: These can be for either consultant or contractor appointment	Meetings with donor or funding agency Takeover/handover

With so many potential meetings it is important to ensure that time is not wasted at them. Clear subject and objective agenda must be prepared to minimise the time spent at meetings. This is discussed in the subsequent section of this guideline.

6.0 THE ESSENTIALS OF A GOOD MEETING

From the above it could be construed that formal meetings are assemblies of a large number of people. However meetings can be on a one to one basis. The rules are still the same, the meeting is generally arranged beforehand, one person must act as chairman, an agenda should be prepared and minutes or notes should be kept and transmitted as soon after the meeting as possible, recording all salient facts and decisions etc. of the meeting.

To enlarge on the points already made, a civil engineering meeting, to be successful, should comprise the following:

- Good Venue
- Reason for meeting known
- Agenda prepared in advance and circulated to all participants
- Well briefed participants
- A good secretary
- Clear concise minutes
- Fixed date and time
- Good chairmanship

6.1 Venue

A comfortable weather tight venue large enough to seat all participants. Neither too hot nor cold, with adequate lighting, no telephones or interruptions from other staff on site or office operations. Simple refreshments, certainly drinking water, if possible with calendars and other suitable reference documents on the wall or available. Its location should be clearly known by all participants or action taken to inform all participants to make sure.

It should not be in a hut which is the supervisors until ten minutes before the meeting, next to a noisy production site, with no lighting or water. Neither should it be a conference/filing room borrowed from a senior manager with constant interruptions by staff, or worse, not available because the senior manager decides he needs a meeting himself.

6.2 Date and Time

The date and time of the meeting should be known in advance. The time probably given as say 10h00, but the chairman/person calling the meeting may plan that the start will be 10h15 to allow for socialising before the meeting and late comers. (If participants persist in being late then a solution is to close the meeting door at 10h20 and not allow them entrance. It is to be hoped that they will be on time next time.)

Lateness at a meeting creates difficulties. To cope with late comers, whether they are unavoidably late or merely do not run their lives to time, the meeting may have to back track to bring the late comers up to date. Whatever the reason it reduces the effectiveness of the meeting. Late comers often do not realise that they waste other people's time as well as their own, by their lack of discipline. Thus it becomes a social as well as a financial problem. It may take considerable effort to improve a situation caused by lack of discipline. Unfortunately senior managers often have the same bad habits.

It may not be easy to judge the length of the meeting before it takes place. Some regular routine meetings, say a daily briefing meeting, should not last very long and be predictable in length. Some participants sometimes commit themselves to several meetings in a morning. This may be forced on them, but the meeting should not be shortened to accommodate them, unless there are sound logical reasons.

6.3 Main Subject and Objectives of the Meeting

The main subject of the meeting should be known and if possible the objective of the meeting. For instance:

"To discuss progress on the ----- Road project." This is the subject

or

" To finalise take-overs on the -----Road Project". This is the objective

If several subjects/ objectives are to be discussed they must be discussed separately, not as a concurrent issues.

For instance in the meeting lists in Sections 4.0 and 5.0, the same people may attend a progress meeting as well as a meeting on take-overs or finance, but it is essential for a good meeting to discuss the points separately. If they do overlap the chairman of the meeting must be firm and skilful to keep discussion on one subject until the matter is resolved or agreement is reached on a course of action to be followed.

In fact take-overs could be a very nice subject for a separate meeting, but probably not to discuss why the take-overs are late, i.e. behind programme. That should be discussed at the progress meeting. If there are several difficult take-overs to discuss, why they are late might repeat what was said at the progress meeting. A meeting on finance and liquidated damages might even be required to discuss the financial consequences of their lateness.

However there are times when two meetings can be run as one.

- Subject of meeting
  The progress on the ------- road project
- Objective of meeting
  To agree the Contractor's proposed additional measures necessary to achieve the programmed finish date.

The subject and objective(s) should be made clear in the agenda. There have been many instances of discussions on subjects not part of the agenda of a meeting, where agreements were made without the right participants attending (because they thought the subject would not be discussed), thus leading to a dispute.

There is nothing wrong in tackling different subjects or attempting to reach a certain objective all in the same meeting, but it must be clear in everyone's mind what the meeting is about. The chairman must exert control so that the various subjects and objectives do not become confused or unclear. A clear agenda circulated before the meeting should help. Sometimes it is possible that time is given for participants to add other subjects to the agenda if appropriate.

All the participants should consider what it is they wish to achieve at the meeting, even in routine frequent meetings. The aims of each person should be clear. If they have no aims beyond merely attending the meeting or they do not achieve their aim on a regular basis, then they should examine themselves. Why was my aim not achieved? Was it their aim that was at fault or was it their own lack of negotiating skills? In meetings this is no less important than with any other management action.

6.4 The Agenda for Discussion at the Meeting

A list of subjects or an agenda for discussion at the meeting will normally be prepared by the person calling the meeting. If it is routine - say a progress meeting -the list of subjects or agenda for discussion will often be decided by the previous monthly meeting. However other participants from

opposite sides of the business may wish to discuss other subjects to do with progress and the subjects can be accommodated under a heading 'Any Other Business'.

For instance a new subject 'national shortage of fuel'. In this case to make a statement bringing the attention of the meeting to a crisis which will affect progress would be appropriate. Or a participant may wish to bring up a totally new subject, say 'Claims', which has little to do with progress and which may be ruled by the chairman that it should be the subject or part of the agenda of another meeting, say, 'Claims' or 'Finance'.

There have been many instances where contractors have wished to discuss claims only to be told that the progress meeting was the wrong place and if it has been made clear that 'claims' are not part of the agenda then the Contractor should have no criticism. However it is not always the case. An astute chairman may perhaps allow a statement from the Contractor on the subject, limited and uncontroversial, and if it seems there is substance in what the Contractor is stating, suggest that a full meeting on claims and their resolution should be convened as soon as possible. The chairman will make it clear that at this future 'claims' meeting that the Contractor will be expected to have all his facts, logically set out and supported by evidence. He will have his statement of the basis for a claim clear and formulated and under which part of the contract he is basing his claim. He will have presented these in ample time for the Engineer to receive and consider the claim and keep the Employer informed.

This may of course not be possible. The chairman may be overplaying his hand. Claims are evocative subjects, but at least the Contractor will know he is expected to attend a special meeting and not divert the current meeting and to have a proper presentation available, even if it is not complete. In addition, if an important item is raised at a progress meeting that may require an immediate decision, a good chairman should allow time for discussion, as when several parties are gathered different viewpoints can be raised which otherwise may not initially come to light if the subject is left for either another meeting or to correspondence between the relevant parties.

6.5 Well Briefed Participants

The circulation of the agenda in good time to all participants should ensure that the subject of the meeting is well known. In some agendas the objectives may be stated, in others it will be left to the participants to consider their own objectives based on the subject matter.

Thus the participants should be able to be well briefed. This should avoid false statements and the presentation of incorrect facts, unless the participant is deliberately attempting to deceive the meeting.

On some projects it may be possible to produce an agreed progress statement drafted jointly by the Engineer's staff and the Contractor. This would be a big boost to discussion and can avoid protracted arguments concerning the same.

At many meetings several participants may attend from the same office. This swells the meeting in numbers but it is sometimes necessary. An ARE on the Engineer's staff may be required to speak on the lack of progress on his section, a subject about which he is an expert. Thus he may attend as well as the Resident Engineer. Similarly the Contractor's Section Engineer may want to attend to counterbalance his opposite number's assertions. This is very understandable, but it can make a meeting too large.

It is often possible for a junior to brief his senior with short written notes, which means he should not have to attend. In any case the manager should have held a pre-meeting briefing/policy meeting, so that he himself is well briefed. At these meetings he should also brief his own people on the policy he believes should be pursued. The policy of bringing juniors to the meeting because the senior is afraid he will not be able to answer questions means he is not well briefed. He should be.

Sometimes a participant will arrive with a contingent of associates to speak on their behalf. This can cause problems unless they genuinely do not take part, so one would ask 'why are they there'? This should be challenged by the chairman. It may not easy to remove people, but large numbers cause an unwieldy meeting and sometimes pose difficulties in getting people to speak their minds. Often at a bad meeting of large numbers competent, important people will not raise matters as they should because of the large audience.

6.6 The Correct Participants are invited to attend

(i) Some people are keen meeting attendees, the reasons for this can be grouped into various categories:

- wishing to be in on everything as a natural instinct to carry out their work properly
- at meetings they may be in the bosses eye and hope their attendance will be taken as a demonstration of their keenness, hard work and devotion to duty
- to talk about work is easier than actually working
- they do no know what they should be doing and attending meetings is an easy option
- they find attending meetings can be an advantage, they say nothing, contribute nothing, and yet use their meeting knowledge to their advantage.

(ii) There are also staff who dislike meetings because:

- they find they keep them away from their "proper" work
- they are bored by meetings.
- they are not confident to speak in public
- they consider people who attend meetings do so for the wrong reasons
- they prefer to do work rather than talk about it.

Generally too many participants attend most meetings and often there are too many meetings.

To sort out who should attend a meeting and who should not is a managerial problem. Who should attend the meeting is generally well known. Who will speak is generally well known. The chairman should ask for the suggested participants before the meeting and he should indicate whether he thinks the attendance of someone special is required. These matters are often neglected.

It must be remembered that the larger the meeting, normally, the longer it will take. This may not be detrimental if the discussion is precise and not repeated, but this is often not the case.

6.7 Clear, Concise Minutes

The minutes of a meeting are the record of remarks and statements made at the meeting. The decisions arrived at, the agreements made. The actions required from the various bodies or participants involved, not only in the contract but also the meeting, are also recorded and the sooner the minutes of the meeting are published the sooner action can be taken.

In some meetings minutes are taken and agreed as the meeting proceeds, this can be an advantage but it slows down the business and can prolong the meeting discussing the minutes. It is believed that it is preferable to publish the minutes within a reasonable time after the meeting. In many cases the minutes of the meeting are circulated only just in time for them to be discussed at the next meeting, often one-month for a normal progress meeting. This is not recommended.

Generally the particular names of participants should not be used in the actual minutes. 'The Contractor replied' is just as clear as the Agent's name that was responsible for the remark.

At or before the next meeting the minutes will be discussed and amendments made to their words so that all participants can agree, and if necessary sign, to the fact that the minutes are 'a true record of the previous meeting'. At the next meeting 'matters arising from the minutes' will be discussed, so it is important that the minutes are accurate.

The minutes should be presented in a style easy to read, clear and concise, as short as the subject requires, but they should fully cover the discussion and they must not be annotated simply for the need to be short. Nor should they be added to, or amended, except under the agreement of all participants. Sometimes a post meeting agreement may be recorded. This can only be added as a postscript providing all participants agree later.

It must be remembered that when agreed by all parties at the meeting as a true record of the (previous) meeting and the actions etc. agreed, the minutes then become a part of the contract. Thus the minutes should be clear and precise and as detailed as any contract document. They should avoid ambiguous statements. After a period of many months the remarks made in a meeting can have an impact on, say, a dispute. It is important that with the lapse of time the minutes are still seen to be clear and not need additional words to explain their meaning.

6.8 A Good Secretary

The taking of minutes is a skilled and important task for a participant or possibly a secretary experienced in such work. If the person who takes the notes is a participant this will obviously affect his ability to take part in the meeting and this may be detrimental to the standard of the meeting. On the other hand he will know what is important to record and what can be left out, making for good accurate minutes.

If the secretary is not a member of the technical staff, he or she may be unaware of the significance of what is being discussed. If every word is recorded, as a good stenographer should be able to, then the notes and minutes may be unnecessarily long and require editing by (possibly), the chairman.

The same problem exists with tape recording all discussions and editing afterwards. This can be an exhausting and boring action. There are thus difficulties with the recording of discussions at a meeting. It can all take time.

There are also dangers of the minute taker being accused of favouring one side of the meeting or the other. The taking of minutes, therefore, can be fraught with difficulties, bearing in mind that minutes should be published as soon after the meeting as possible.

It requires a person of integrity and experience to carry it out.

6.9 Chairmanship

The subject of the chairman of the meeting has been left to the last, as it is possibly of greater importance than all other considerations. He is the overall manager of the meeting. If other participants attempt to take over the meeting he must either assert his authority or surrender it gracefully and make all other participants aware of his action. He may not have called the meeting, he may have delegated that action to another member of staff, but he must oversee and pay attention to all the matters above if the meeting is to be successful. The usual rules of management apply:

- the chairman/person calling the meeting will plan that the start time for the meeting will allow for socialising before the meeting and latecomers
- the chairman exerts control so that the various subjects and objectives do not become confused.
- it is essential for a good meeting to discuss subjects separately and if they do overlap the chairman of the meeting must be firm and skilful to bring the discussion back on the correct track
- if a totally new subject (not on the agenda) is to be discussed then it requires the chairman's permission. He may suggest later on in the meeting, when normal business has been concluded
- an astute chairman will perhaps allow a statement from a participant on a contentious new subject, providing it is limited and uncontroversial. If it seems there is substance

in what the participant is stating, he may decide that a full meeting on the problems and their resolution should be convened as soon as possible

- the chairman should know who the participants are before the meeting and he should indicate whether he thinks the attendance of someone special is required
- a participant may arrive with a contingent of associates who intend to allow the participant to speak on their behalf. This can cause problems if they keep feeding the speaker with information. This may need to be challenged by the chairman, otherwise the meeting can degenerate.
- It must be remembered that, usually, the larger the meeting the longer the meeting will last. This may not matter if the discussions are important, precise and not repeated, but this is often not the case. Here again this is a matter for the chairman
- In a crisis the chairman may have to brief participants at the actual meeting.

The chairman should always be ready to intervene if a participant talks for too long or if points are repeated and, more difficult, to cool tempers if they become frayed. He is the manager of the meeting, he should control it. If minutes are to be agreed at the meeting he must ensure that all parties realise what the minutes contain.

7.0 RECORDS

The need for records! There is always a great need for agreed accurate records. Communication without records can die. Letters can be lost, peoples memories fade and become inaccurate. Neither the Engineer's staff nor the Contractor's site staff can keep enough records.

All too often, both sets of staff consider records come second, to the work actually on site. This may be due to pressure of work or not enough time in the day. Often site staff, on both sides, are not good at keeping records. The explanation can be "I've got a team waiting to start concreting / sub base etc, sorry about the records."

Clearly the manager, whether the Contractor's Agent or the Engineer's Representative, must take action about this situation, not necessarily by rebuking the culprit. Systems have to be designed to avoid this situation. A lot could be said about special filing systems, computer data systems, but both are only as good as the information recorded. This is often forgotten when discussing sophisticated site control systems by computers, which often require extra staff to satisfy the voracious computer. Systems have to be adopted to the contract's needs or the special needs of the incident, to be recorded, and thus must be flexible.

In most conditions of contract, the Engineer can require the Contractor to record information and he can prescribe the form and detail of the information recorded. This can be carried out by using day work sheets which are often signed for 'record purposes only' meaning the costs may not be agreed but the time taken to carryout the activity is acknowledged. An example is included in Appendix A.

Meetings may need to be held (either internal or between the Contractor and the Engineer's staff), drawings, sketches have to be made, setting out data i.e. chainage and level recorded. This all has to be thought about.

Clear, logical diaries of day to day incidents, plus extra notes kept in a logical filing system which enables them be retrieved or referred to easily, are obvious simple systems, but it is surprising how often these sort of records are incomplete.

All the above has been aimed at the second or third level of management, say ARE level on the Engineer's staff and Section Engineer /Assistant Q/S on the Contractor's side. This is below the Engineer's Representative and the Contractor's Agent, but they ought to check that this is indeed being carried out.

A contractor has to keep records of the hours his men are working, in order to pay them. Most contractors have the foremen/gangers (second/third level of supervision) make out sheets which

record time spent on various tasks for the members of their teams. In the UK these sheets are called allocation sheets and are used, first to pay the men (overtime, special condition money, bonus etc.) and secondly to be coded and used in the costing system. They are also used for recording claims or information on incidents, or genuine cases of work ordered to be paid at daywork rates by the Engineer's staff. An example is included in Appendix A.

Generally the Contractor has to record, with the Engineer's Representative, information on plant, labour and materials expended, plus any other information such as work delayed, machines and men not able to work, materials wasted. Usually this will be at Section Engineer level. He takes this information from his own records, but also from the allocation sheets filled in by the gangers/foremen. He has dayworks sheets made out to pass over to the Engineer's staff. Here it is inferred that a clerk has been introduced into the system or the Section Engineer may become overloaded.

The Engineer's staff do not have the advantage of ganger's allocation sheets, they must remember, or better note down, times/ facts for themselves in a logical manner in a site note book. Thus, when the dayworks sheets come in from the Contractor, the Clerk of Works / ARE can sign the record as correct or make their own amendments before processing the sheets further. The dayworks sheets are then be passed to the Engineer's Representative who (after due explanation and consideration) would sign the sheets for payment (if a genuine dayworks) or for record purposes only as the case may be, and return signed copies to the Contractor's Agent. This is one way of recording incidents, but this may assume that the incident has been accepted by the Engineer's Representative, at least for record purposes only, often the cause of disagreements on site.

Another method of developing records and communications is the adoption of regular financial and claims meetings. The contractor should hold a brief meeting every day, with his senior staff, where problems on site are discussed and site work co-ordinated. Incidents can be identified as having progress, financial or claims significance. A similar system of records to the one described above could then be invoked with the Engineer's staff.

This should be reinforced by the Contractor with regular meetings with the Engineer's Representative to discuss financial matters, at which all matters of finance and payment could be discussed, such as late payment of certificates, the discussion of incidents, whether they were claims or could be paid directly, fixing rates, discuss ongoing claims, discuss variations and all matters of financial consequence. This is an additional meeting to the normal progress meeting. Minutes are kept and actions, or more importantly non-actions, recorded. Often the Contractor's staff and Engineer's staff complain at having to attend these meetings, "I am far too busy on my important work". However, what could be more important than progressing and amicably settling financial matters?

Progress and standard of workmanship go hand in hand to the satisfactory completion of a contract. If these matters are neglected the project can be said to have failed. Potholes and flooded areas in a road not completed to time are one thing, wrangling on claims for several years and ending in litigation, is another. They all cost money, and generally the Employer is expected to pay.

8.0 CORRESPONDENCE

8.1 General

Correspondence may arise at several levels between:

8.1.1 Site Agent and Engineer's Representative

Generally speaking the Site Agent should sign all mail which originates from members of his staff. Whatever members of his staff may think, this is good management and ensures that letters from differing staff members on the same subject can be co-ordinated. Thus the Contractor speaks with one voice at site level. If the Engineer's Representative knows that

this rule is applied he can be sure this is the voice of the Contractor given by a responsible member of his staff.

Similarly, the Engineer's staff must obey the rules laid down when their duties and powers were specified and it is often better for the Engineer's Representative to sign all formal mail on site, as his powers allow.

8.1.2 Contractor's Head Office to Engineer or ER

Similar rules apply to the correspondence from a level above site. The Engineer and the Engineer's Representative must co-ordinate and so must the Contractor's head office management co-ordinate with site.

The names of those who represent the company and can sign correspondence on behalf of the Employer, Engineer, Engineer's Representative and Contractor must be established right from the start. The ground rules for the contract, the routes for correspondence, with the names of staff permitted to sign letters and documents must be set out at the start of the contract.

8.2 Facts must be correct

The facts must be correct, references given of clauses in the Contract, instructions and supporting evidence documented. Half truths designed to throw the opposition off the scent of an impending action, are dangerous and immoral.

8.3 To reject the correspondence

If the recipient of the correspondence wants to refute the incoming correspondence he should reply politely and without provocative or personal language, giving logical statements to support his rejection and once again quoting supporting evidence. Needless to say this should be carried out as soon as possible.

8.4 Be brief

Above all, be as brief as possible. Too many words sometimes gives the opponent a basis for another letter refuting the case. Leave detailed discussion to meetings, where you can refer to the letter and it's headings and discuss them across the table. It is often better to merely set out the logic by correspondence and fill in the details later. Long letters can be mis-interpreted.

8.5 Marking of correspondence

People often mark the originals of correspondence. Directions of distribution may not be dangerous (in some cases they might be), but to write even non inflammatory notes etc should be avoided. It must always be remembered that in Arbitration all files of correspondence will be open to both sides, and a note discovered in the files may be detrimental to the case.

One solution is to keep all the originals of letters in a private file and only distribute copies, which may be destroyed, at regular intervals. It is the content of the letters that matter, not the indignant opinions of members of staff, even before any dispute occurs.

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