

Construction of Courts Compound at Mansoura City

Planning and Monitoring Control Sector

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Summary

At the beginning of this paper I have given a brief description about my country Egypt and statistics of construction industry for the last five years. Further I have explained about company 'Societe Egyptienne D'Entreprises' and the management procedure to construct the projects. Also I have explained the role-plays by 'planning and monitoring' sector. I choose the project 'Courts Compound at Mansoura City' as an example to show how these procedures are applied when this project was carried out. The problems encountered in this project and the experience gained from this course of International Construction Management are also mentioned here. I believe that important considerations in the production stage are necessary. Providing appropriate trainings to both the Engineers and the workmen would definitely improve their skills resulting to better Quality workman ships. The use of Computers to get the required information from different sites can be done easily compared to the manual system. Important documents such as cash flow project cost estimate and life cycle cost of the project can easily be done using Computers. Resistance to change, such as Computerization process could not easily be remedied and could take a larger time if the users lack appreciation of the modern technique.

I learned from the lectures that property management is a very important aspect that must be considered as early as the design stage. The owner must have a good idea from the start, how should the project be managed when completed to attain the maximum life and benefits to the owner as well as the users.

I believe that international standards such as ISO 9001, 9002 and 9003 could be good management systems to be adopted to improve the Quality of design, construction, Inspection and service.

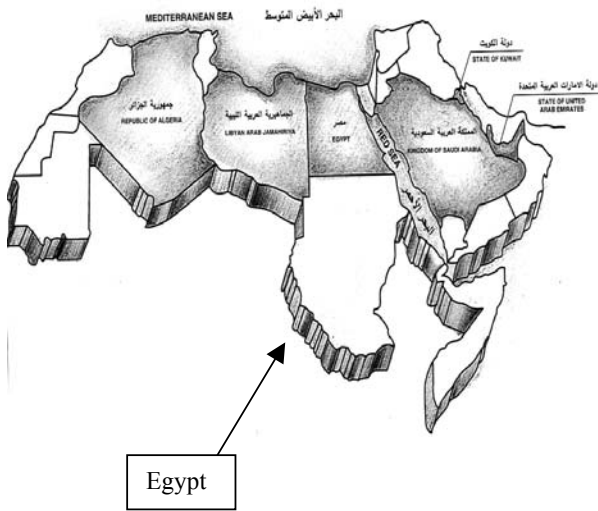
Introduction

Construction Industry has a flourishing era nowadays in Egypt. About a 50% of the Government Budget is allocated for the construction industry in our country. Infrastructure works, potable water treatment, Waste water disposal, construction of roads, bridges, land reclamation and irrigation, construction of public buildings, generation of electrical power, development of tourist villages and their utilities, new cities and housing etc. are in progress at every where from upper Egypt to lower Egypt. The public sector also plays a strong part in these activities as well as the government sector after the policy of the Government changed. Most public authorities were privatised. After year 2000, all the institutions may be privatised fully. My Company Societe Egyptienne D' Enterprises 'SEDE' is a subsidiary to the National Company for Construction Development Egyptian Holding Joint Stock Company. The Government Contracts are carried out by various Companies and my Company is among the top three & always plays the role of the main contractor.

Aim of the paper

To present the Procedures to be carried out in the Construction Management of Projects in 'SEDE' which has more than 100 Projects in progress. The Project presents here is Construction of Courts Compound at Mansoura City, which is located close to the Nile River, the second longest River in the World. The Client of this project is the Ministry of Justice in Egypt. The Consultant for the Project is the Arabic Consultant Office in Egypt. The value of the Project is 16 million LE about 4.7 million \$. The main Contractor for this project is company 'SEDE'. Further more I present how my sector 'Planning and Monitoring Control' plays the important part to control cost of projects and co-ordinate all Projects (value of which in between 5 million LE to 500 million LE) with the board, site sectors (14 sector) and all

Company's sectors. I will also mention the experience I have gathered from this course and how I can implement in Company.



A Brief Description of Egypt

The population of Egypt is 66 million. The annual growth rate is 1.86 %. The capital of the country is Cairo and the population there is about 20 million. Arabic is the official language and most educated people speak English and / or French. The majority of the people are Muslims (93%), Christians (6%) and others (1%).

Geography

Egypt lies on the Northeast corner of the African continent surrounded by the Red Sea on the East 35 longitude and the Mediterranean Sea on the north 32 latitude and Libya on the West 25 longitude and Sudan in the South 22 latitude. Except for the chain of Mountains on the Red Sea side, and several minor other locations, Egypt is plain. The Nile River the second longest river in the world, across Egypt from South to North, the Nile creates a green valley on both sides until Cairo, which is the capital of Egypt is 200 km. away from the Mediterranean Sea, where the Nile creates a large green delta (250*200 kms) the remaining area is fine sand. The area of Egypt 1,001,450 square kilometres.

Climate

The climate of Egypt in the Winter is warm and sunny with scattered showers of rain, except for the 50 days of dusty wind. The temperature varies in between 12°C and 20°C. In Summer the climate is very hot and dry and the temperature is in between 38°C and 44°C. There are four seasons known as Spring, Summer, Autumn and Winter in my country. The winter is from November to February, the Spring is from March to April, the Summer is from May to August and the Autumn is from September to October.

Economy

NAt the end of the 1980 s, Egypt faced problems of low productivity and poor economic management, compounded by the adverse social efforts of excessive population growth, high inflation, and massive urban overcrowding. In the face of these pressures, in 1991 Egypt undertook wide-ranging macroeconomic

Stabilisation and structural reform measures and had succeeded in establishing its national Economy and has been moving toward a more decentralised market-oriented Economy. Recognising the fact that foreign aid will be reduced, and with policy of privatising a number of state owned companies, modifying laws and regulations that would attract investments to Egypt. By the end of 1997 Egypt got an amazing economy by being showered by foreign investments. The economic reform programme has scored a remarkable success leading to outstanding results beyond all expectations. The industrial products are Textiles, Construction, Tourism, Chemicals, Petroleum, and Production of cement and metal. Agricultural products are cotton, rice, corn, vegetables, and fruits. Egypt imports machinaries and equipment, fertilisers, Wood products.

Currency: Egyptian Pound (P) =100 piaster.

3.4 (P) = 1 \$.

The sources of hard currencies to Egypt are from the remittance of Egyptians working abroad, tourism, Foreign aid, the Suez Canal revenue, oil exports, and non-oil exports.

Real GDP Growth Rate 4.7 %.

Inflation rate 3.6 % (1999).

In the near past, the economy of the country relied on the agriculture which was periodic, but now has become all over the year after the construction of the High Dam on the Nile river in Aswan (300 km north of Sudan). Now the industries are flourishing in various fields; especially those depending on agriculture. As a result of this situation, the standard of living is drastically improving. Prices are escalating but revenues are increasing as well.

Culture

Civilisation is born and does flourish in the deltas. This is where stability exists. This is where Egypt, the gift of the Nile River, has always been the Oasis of Science, Art Literature and Philosophy. The ancient Egyptian kings (they were also Gods) had reached the highest levels in Construction the Pyramids, Sphinx, Needles etc in medicine including Autopsy treatment, Operation, Body conservation etc. Industry, Art and Science still amaze the Scientists of today.

From long time ago when Egyptians started going to Europe to study before any other neighbour country did. Egyptians continued to drink from European culture, merge it with their ancient Egyptian Islamic one. Modern Egypt cultures is a mixed culture.

In Egypt, from the old magnificent Culture and it's glorious history of Faros, Pyramids, Sphinx etc. upto Elazhar which is a religious structure stood for over thousand years on the eastern side of Cairo Sending light

in all directions and immortalising the Science of the Arabs and the Civilization of Islam.

Recently, Cairo Tower, Opera House, Cairo International Conference Center which is considered as one of the largest Conference halls in the World. At present, Egypt has the Advanced Communication Technology with satellites.

Political Situation

President Sadat changed the Egypt Policy from a Socialist Regime into a free, Western-type one. He set out strong relationships with America and the West. He Called for Peace with Israel and signed a peace treaty with them ending a long War Era and looked forward to construct modern Egypt. He opened the door fully to the West Economy. His successor Moubark continued his path but with wise and keen steps. He set a real Democratic regime; he founded a proper modern and healthy Atmosphere for a strong Economy based on science, experience and study. Now Egypt has good and proper relationships with different countries, regimes. It encourages local and foreign Investment and Capitals to come to Egypt with all guarantees.

Government type: Republic

Legal system: based on English common low, Islamic low, and Napoleon codes.

Construction Industry in Egypt

At the last five years about 50 %of the Government Budget is allocated for the construction industry. The following table shows the amounts allocated for the construction industry in each year from 1995 to 1999.

Statistics for public sector

Value in Milliar LE.

Year	Budget	Construction Industry
98/99	19.07	9.8
97/98	18.5	8.9
96/97	17.3	7.8
95/96	16.1	7.1
94/95	14.7	6.1

For private sector

Year	98/99	97/98	96/97	95/96	94/95
Budget	43	39	28.2	20.7	16.1
Construction Industry	19.4	17.6	12.6	9.3	7.2

At present, my company 13% is privatised and the whole company will be privatised.

The company plays the role of the main contractor and this executes only constructions works and the consultants do all designs (Architectural, Structural, Mechanical, Electrical, etc).

The types of projects handled by my company are as follows.

1. Direct Commitment Orders for projects by government (estimated value and duration).
2. Tendered Projects for Government.

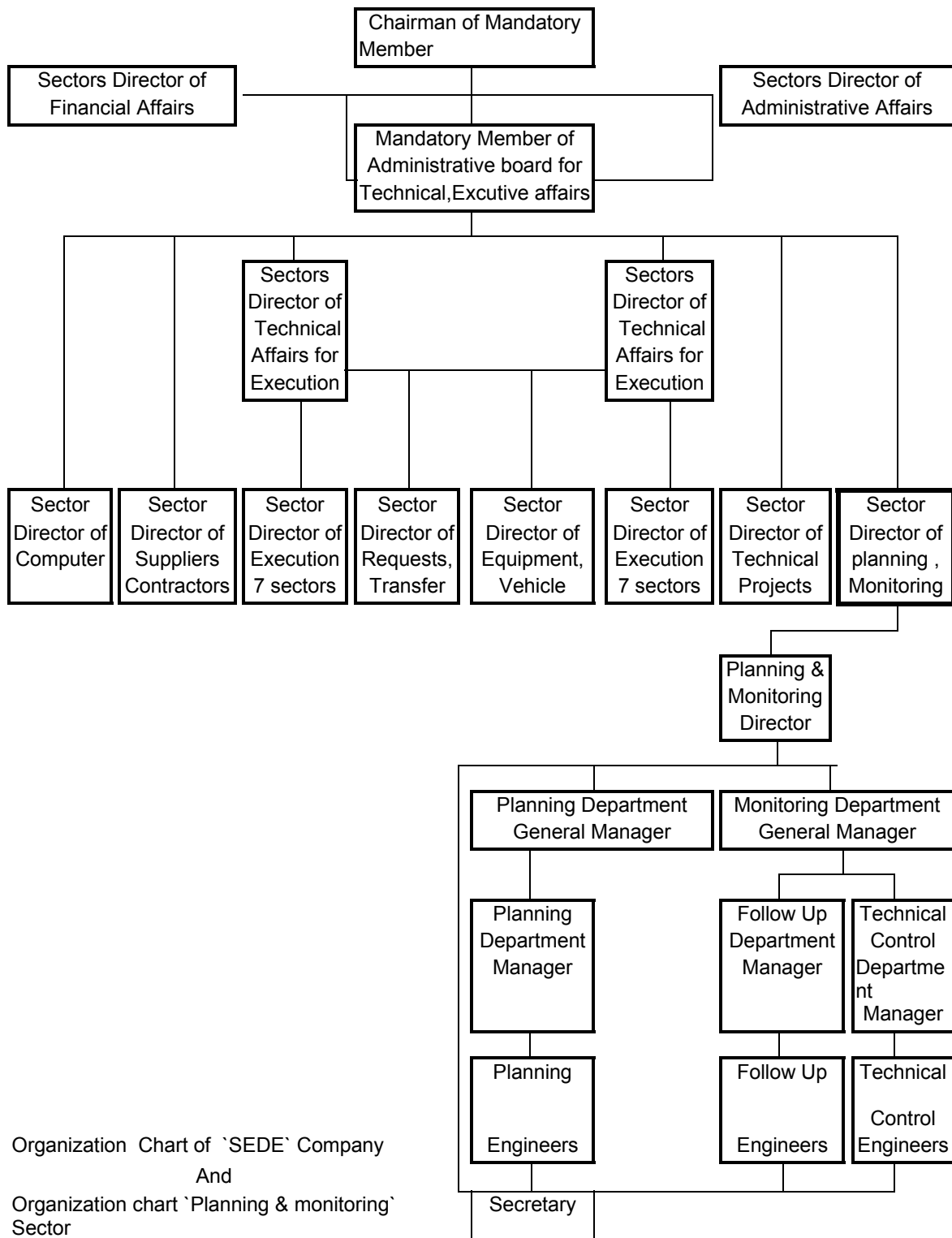
Construction Management procedure for Projects in company

1. Pricing

- Pre-qualification.
- Tender components.
- Tender Type, lumpsum and turnkey
- Agreement with foreigners: subcontractor, Consortium and jointventure.
- Conditions: Egyptian law⁹, fidic, special.
- Pricing Item, Material, Equipment, and Employers.
- Cash Flow preparation.
- Managing prices.
- Define the conditions with theTender Documents.

2. Execution

- Presentation of insurance Policy
 - All risk (Total Projects Insurance).
 - Employers Insurance.
 - Third party Insurance.
- Presentation of Advanced Payment bond.
- Presentation of Detailed Schedule.
- Presentation of prices Analysis.
- DefineCommunication System with the Client and the Consultant.
- Define Communication with the Company Management.
- Choosing the Project Manager.
- Facilitate Contract Signing.
- Preparation of Projects Organisation Chart.
- Restudy of Tender and Preparation of Practical Budget.
- Preparation of detailed time Schedule.
- Define Method statement.
- Preparing Mobilization.
- Preparing Procurement.
 - Study of Technical Specification for all of the Materials.
 - Contracting or giving Purchasing and Supplying Order.
- Assignment of the Organisation Chart.
- Execute Mobilization.
- Assignment of subcontractors & supplying the needed Equipment.
- Execution until Acceptance.
- Managing any delays.
- Solving any problems faced during execution.
- Presentation of Performance Bond (10 %)



3. Control

3-1 Period (Duration).

- Define a constant follow up system.
- Define Constant meeting dates.
- Define constant dates for sites follow up visits.
- Prepare regular follow up reports.
- Do what it takes in case of delay or incompatibility.

3-2 quality

- Define a constant Quality control system.
- Make sure that the quality control system is followed.
- Do what it takes in case incompatibility.

3-3 Cost

- Approval of Cash Flow.
- Monitoring the execution of the Cash Flow.
- Do what it takes in case incompatibility.

3-4 others

- Define security system, safety, and cleanness.
- Follow this system.
- Do what it takes in case incompatibility.

Tests

Tests of Material

- Before the work starts.
- During execution (according to contract conditions).
- Tests of work that is executed and these tests depend on the type of the Project (Potable water, Sewerage, Bridges.)

At present, my company constructs about 100 projects in Egypt and 3 projects in United Arab Emirates and finished a lot of projects in Saudi Arabia, Algeria, Libyan, and Kuwait.

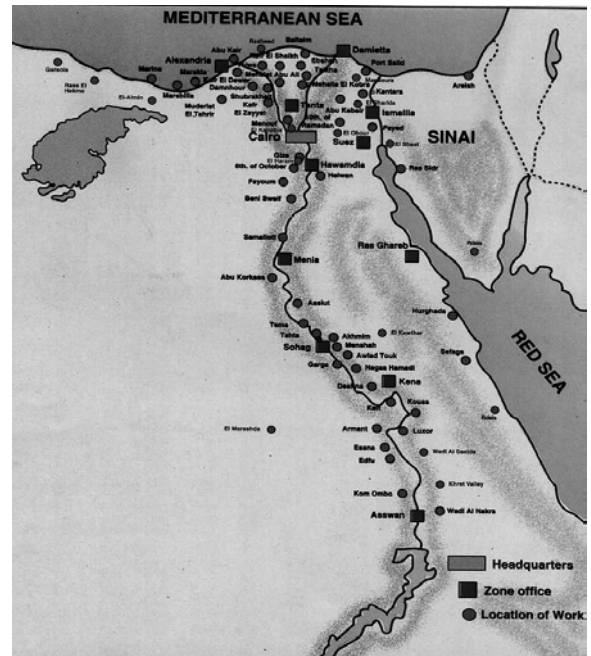
And I am the director of Planning and Monitoring sector and this Sector co-ordinates with the board of the company, site sectors (14 sector) and the sectors of company such as suppliers & contractors sector, technical projects sector, financial sectors etc. as follow:

The Planning and Monitoring Sector has three departments:

- Planning Department.
- Follow- up Department.
- Technical and control Department.

Planning department

The main role of this department is to review the time schedules for each and every project in the company. It has to deal with all the informations of projects by using data base computer programme to specify every detail such as the name of the project, date of commencement, name of the client, address of the client, name of the consultant, location, the description of the work, type of work, type of contract, the value of the project, the value of the executed work, the planning value, the target date of completion, provisional acceptance date and final acceptance date etc.



The locations of Sites of Projects in Egypt

Duties of the department

- Define available budget values for both the employer and the official government budget.
- Prepare annual report for financial and execution status for all projects.
- Prepare annual executed quantity analysis by the difference between invoices at the beginning of the year and the invoices at the end of the year for every project for every item such as excavation, concrete, pipes, mechanical and electrical works...etc).
- Compare the materials used at work with the material issued by the stores. The materials used at work must be calculated using the invoices signed by the consultant. The form, which is used for this purpose, is shown in table (1).
- Maintain records of projects in different fields such as potable water, sewerage, roads and bridges, etc. (pre-qualification).
- Prepare complete computer database design, which is updated, instantaneously for all the company's project.
- Collect all informations of projects handled by the company periodically to :
 1. National company for development and construction.
 2. General auditing organisation

Follow Up Department

The main role of this department is to issue the monthly up dated time schedules for each and every project and to issue the related evaluations to the board of the company. Also the members are playing a very useful role in the co-ordination between various sectors in order to surmount the causes of the delay in the work sites by preparing periodic monthly follow up for all company's projects

through an accurate system by assigning a responsible engineer for each execution sector whom follows up work progress and prepares a report that contain:

- Comparing what is actually executed and the planned for each item of the project.
- Check surveying booklets and make sure that the employers approve them.
- Monitoring the materials in storage and that they are satisfactorily used.
- Monitoring manpower, their number and efficiency.
- Quality control (material testing, concrete quality, etc).
- Defining all problems faced in sites (lack of materials, subcontractors, equipment's, consultant, drawings...etc.).
- To follow up the penalty delay.

Financial data:

- Calculate the percentage of work done monthly for each item of the schedule.
- Check the approved invoices.
- Calculate the percentage of work done in each zone and maintain record for all zones.
- Refer the reported problems to the relevant sectors for finding immediate solutions.

A full report is prepared after collecting all data from every site and this report is forwarded to supervisors for their reference and necessary decision action (monthly).

The form, which is used for this purpose, is shown in the appendix.

We always use camera to have pictures for all sites.

1. Following up the projects in United Arab Emirates Using their monthly reports.

Technical Department

Duties of the department:

- Prepare technical compatibility's comparing sub -contractors and company's invoices, If any discrepancy is found, action is taken to correct them at sites in order to protect company's resources. The form, which is used for this purpose, is shown in table (3).
- Arbitration is carried out if any disagreement is found between the site engineer and the sub-contractor of the project.
- To maintain the registers for provisional acceptance certificates and final acceptance certificates for each project.
- To check the engineers work and see that they are following up the project until final invoice and final completion certificates are used.
- To release the insurance held by the employer after issuing provisional completion certificate and final invoice.
- To follow up claims and arbitration in some projects.

The project



`Courts Compound at Mansoura City`

The building is 40 m. long and 40 m. wide. It is a 12-floor building. The building consists of 9 Criminal Halls, 7 penal halls and every hall has a meeting room attached to it. The front facade consists of Marble granite and artificial stone. The building is equipped with automatic fire alarm. This building has four lifts to serve people, employers, Judges and District Attorney at law. This building was put up on a clayey soil and it was designed to use a pile foundation, which consists of 380 concrete piles. The value of this project is 16 Million LE. About 4.7Million \$.

Actors

The Ministry of Justice is the Client.

The consultant is Arabic Consultant office.

The main Contractor is SEDE`.

Design stage

Different stages of a project

- Briefing
- Designing
- Constructing
- operation

The purpose of briefing stage is to enable the client to specify project functions and cost limits, so that the design team can interpret their wishes and provide cost estimate. The briefing stage starts when a decision is made to implement the construction project. This stage is very important for the successful completion of project for the economy as well as for the quality. In the briefing stage the project manager should:

- Make a project plan with time schedule and quality assurance.
- Help the client to appoint the design team.
- Make a budget.
- Interpret the client demands
- Contact authorities.
- Integrate the users in the project.

The purpose of the designing stage is to complete the brief and determine the layout, design, and method of construction and estimated costs for the project. Further, the purpose is to prepare the necessary production information, including working drawings and specifications.

The following activities are normally fulfilled in this stage.

- Scheme design.
- Detail design.
- Working drawings and specifications.
- Bill of quantity (B O Q).
- Preliminary production programme, including time-schedule.
- Quality assurance.
- Economic analysis and control.

My Company is responsible only for the construction of the project.

Tendering Stage

After the Drawings, Bill of Quantities, Specifications are prepared in consultation with the client the consultant has to call for tenders in order to select a contractor to execute the project.

The tender documents consist of the following.

- Conditions of tender (general, special).
- Complete set of Drawings.
- The Bill of Quantities.
- Technical Specifications.

Publication of the Tender Notice

The consultant prepares the tender documents and publishes the tender notice in the newspapers. Lot of companies and various other qualified persons can bid for the published tender. My company also goes through these tenders and checks all information in detail and submits our company's bid to the consultant as an initial step.

Following activities are processed in studying the tender in 'SEDE' Technical projects Sector.

Study tender documents

- General and special conditions of tender.
- Technical specifications.
- Bill of quantity (B.O.Q).
- Drawings.

Site inspection

- How to reach the site.
- Water and electricity.
- Soil type and pores.
- Possibility of workers housing.
- Getting material prices from the nearest source.

Project technical study

- Prepare an execution schedule.
- Studying and revising quantities tables.

- Define the equipment required, number and specifications.
- Listing raw material and prefabricated materials required for the projects well as subcontractor's bill of quantities.
- Preparing a schedule for quantities required and its date of arrival and also equipment, supervising labour productivity and subcontractor.

Analysis of the prices for the items in the project

- Getting offers of raw material's prices, equipment and subcontractors prices from several sources including supplying period. (Purchasing sector, contractor sector, etc).
- Preparing prices comparing lists and choosing the most suitable materials after studying each one separately.
- Studying productivity rates and consumption of supplies and equipment.
- Preparing cost study for general expenses.

Financial study

- Preparing financial cash flow.
- Define amounts of money required to finance the project and its interest.

Conditions

1. Write the presentation letter.
2. Writing the general, financial and technical conditions that will be presented with the tender.

Revising all calculations

1. Cost study
2. General expenses
3. Quantities and rates
4. Financial studies.

Primary agreement with the Administrator.

Revising the works final form.

Final budget:

All studies are presented to the Administration Sector to be approved or modified and the final budget is prepared accordingly.

The presentation letter is signed as well as the conditions and tender documents.

Award the Tender

Tenderers submit their bids to the consultants.

The consultants evaluate the tenders they received and Select the suitable tender to award the contract.

The "SEDE" construct same type of buildings in different cities for the same client. The 'SEDE' was selected as the contractor by the consultant in the tendering stage. Also this tender was the lowest.

The consultant sent the letter of intent to 'SEDE'.

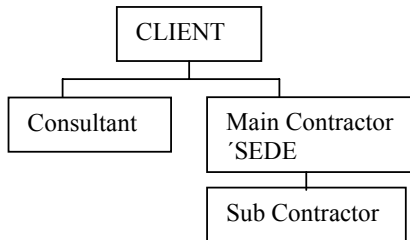
After getting letter of intent the following activities were carried out by my company.

- The client and my company signed agreement for the project.

- Request was made for an Advance Payment by sending a guarantee letter.
- Collected the Advance Payment (20%) of the project value
- Submitted the provisional and final guarantee letter.
- Made insurance for the manpower, equipment, work etc. of the project.

Project organisation

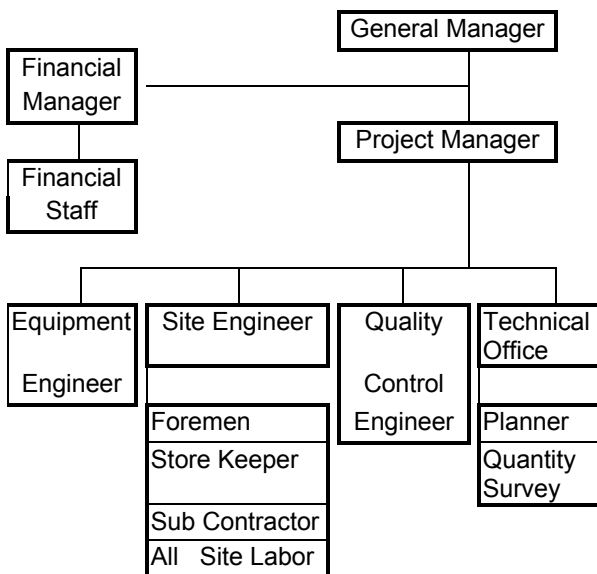
The 'SEDE' plays the role of the main contractor. The following diagram shows the relationship among the client, consultant and the contractor.



Standard approach

The standard approach:
 In the standard approach the client first procures consultant for the design activities and then procures a main contractor by the tender procedure. The main contractor is responsible for the implementation of all construction work, including the work of subcontractor.

Project Organization chart



The General manager is responsible for the total performance of the project within the budget and other

instructions he gets from the general manager of the board and to report to the board.

Project manager tasks:

- To present time schedules and detailed budget and basic condition for the project.
- To propose organisation.
- To distribute tasks within the project organisation.
- To control invoices.

Construction Stage

After getting selected as the contractor for this project and signing agreement with the client, construction of the project was commenced as soon as possible. The Consultant handed the site and this date was recorded as the date of commencement of the project. The works of the project were carried out by using the workmen at company as well as by sub contractors. Sub contractors carried out most of the works. Sub contractors were selected by following the tender procedure and they were given an advance payment of 15%-20% of their contract value depending on the conditions given in the agreement and advance payment of 20 % 30% for Mechanical and Electrical works.

In Egypt now there is a general union Construction Contractors for Egypt classify all contractors to seven sets in all items of construction according to the Experience and the total value of work done by the contractor in this item. Also in my company we classify all contractors.

Purchasing –procurement –contracting

Contracting form:

It is normally used the Fixed Price Contract system in my company. That is the measure and value contract system. The measure and value contract system is adopted in the project. The company submits the invoice for the work done during that month to the consultant. The consultant checks the invoice. After getting the approval from the consultant, the invoice is submitted to the client to get the payment

Purchasing - procurement:

- All suppliers and subcontractors selected by following the tender procedure and select the best suppliers and subcontractors.
- The project manager and the engineers of technical office study drawings and B.O.Q. to prepare schedule for purchasing and list of items according to time schedule and also determine the suitable methods to execute each activity and determine the activities required to be done by subcontractors.
- There are two sectors to carry out these works.
- Suppliers & Contractors sector.
 - Requests & transfer sector.

The contractor has to submit samples of materials to the consultant in order to set the approval. After the

consultant gives the written approval for the sampler, the contractor makes arrangements to purchase.

Importing Materials

Being the contractor, my company has to import lot of materials for various sites. The Requirement Sector purchases imported materials as well as local materials. Telephone system were imported for the project following activities are carried out in importing materials or equipments.

- To follow custom clearance procedure for equipments, machines, spare parts etc. required by the company through the different customs.
- Study available alternatives between buying with foreign currency or from local market.

Production planning

Planning is very important for the successful completion of the construction project. Planning must be based on clearly defined objectives. Planning should include forecasts of resource requirements such as people, materials, equipment and financial requirements.

Project planning procedure:

- Reading the specifications (contract documents)
- Reading designs drawings and the bill of quantities.
- Reading tender documents.
- Reading the method of statement
- Choosing break down method of schedule.
- Define the main activities (excavation, testing, concrete etc) and prepare a coding system.
- Defining the time relations between activities and logical lags.
- Calculating time duration required for each activity.
- Data entry for activity data and relationships.
- Define the total duration required for execution and must be less than or equal duration defined by the client.
- Draw a float, barchart, early dates and late dates that activities could be carried out.
- Prepare a coding system for resources.
- Quantity survey for each activity.
- Resource loading for items in the bill of quantities.
- Get S-Curve.
- Price the items of the bill of quantities and required materials.
- Get project cash flow.
- Preparing a coding for labourers and equipments.
- Surveying the requirements of each activity from labours and equipment.
- Resource loading (for labour and equipment).
- Get labour and equipment histograms.
- Presenting the bar chart to be approved by the consultant and the client. After the consultant and the client approve it becomes the main schedule (target).
- A copy of the approved bar chart or schedule is taken from the main schedule and is updated weekly or monthly at the technical office at the site as per the work executed and then compare with the main schedule.

The primavera computer program used in the project.

Description of Work in Project

Item	quantity	unite
Excavation	3778	m3
Backfill, displacement		
And settlement	1701	m3
Plain concrete	634	m 3
Reinforcement	11194	m3
Insulation	8386	m2
Brick works	7316	m2
Brick works	2577	m3
Rendering , Paints		
And cover walls	98468	m2
Tiles, floor and		
Marbles ,floors	22980	m2
Plumbing works		
Carpentry works		
Steel metal works	2043672	LE.
Electrical works		

Project financing

The accountant manager finances the project. The following activities are carried out as follows:

- The accountant manager and the planner design the finance of the project.
- The accountant manager with his assistants determine the cost of each activity considering the contracts of suppliers, subcontractors, salaries of manpower, cost of equipment. And design cash-out chart according to time schedule of each activity.
- Get cash flow (cash in & cash out) as the planning procedure.
- By drawing cash flow we find negative periods of the project life. By using, redistribution of the time schedule minimize this period as much as possible .In order to cover this negative periods an application is presented to get bank facilities with the guarantee of the company’s budget and assets, and as we are one of the working sector companies which follow the National Company. The loan interest rate 11-12.5% and for the whole company not for projects.

Main financial sources:

- Advanced payment.
- Bank loan.

The summary for financing in the project.

- Payment according to approved invoices by the consultant and client (monthly).
- Pay the subcontractors commitments for works was related with actual collecting for rights from client.

Insurance and Taxes

Following insurances and taxes are to be made by the company.

Kinds of insurance-

- Provisional insurance: 5 % of the total value of the project.
- Final insurance: 5% of the total of the project.
- Insurance on manpower, equipment and project.

Kinds of taxes:

- Contracting tax: 0. 5% of the total value of the Project.
- Stamp Tax: 3.1% of the total value of the project.

Project management

Project management is the process of planning, executing and controlling a Project from start to finish in a given time, at a given cost, for a given end product, using available human and technical resource.

Quality

An effective quality system should be designed to satisfy customer needs and expectations while serving to protect the company's interests. A well – structured quality system is a valuable management resource in the optimisation and control of quality in relation to risk cost and benefit considerations.

Project manager

The project manager has the ultimate responsibility for quality management on the project. Quality management has equal priority with cost and schedule management.

The direct measurement of quality the responsibility of the project the quality control engineer.

Quality assurance

Quality assurance is the collective term for the formal activities and managerial processes that are planned and undertaken in an attempt to ensure those products and services that are delivered are at the required quality level. Q.A. function that attempts to ensure that the project scope, cost, and time function is fully integrated.

Q.A.as the management section of quality management. This area where the project manager needs to established the administrative processes and procedures necessary to ensure and, often, prove that the scope statement conforms to the actual requirements of the customer. The project manager must work with his team to determine which processes they will use to ensure that all stakeholders have confidence that the quality activities will be properly performed. All relevant legal and regulatory requirements must also be met.

A good quality assurance system will:

- Identify objectives and standards.
- Be multi functional and prevention oriented.
- Plan for collection and use data in a cycle of continuo improvement.
- Plan for the establishment and maintenance of performance measures.

Quality control

Quality controls the technical aspect of quality management. Project team members who have specific technical expertise on the various aspects of the project play an active role in quality control. They set up the technical processes and procedures that ensure that each step of the project provides a quality output from design and development through implementation and

maintenance. Each step's output must conform the overall quality standards and quality plans; this ensuring that quality is achieved .A good quality control system will select what to control. Quality Control is a cure and quality assurance is prevention.

In the project the quality control was done as follows:

- A method of statement in which the procedure that was be adopted in the construction works was submitted by `SEDE` to the consultant for approval.
- The contractor purchasing Materials as specified in the specification.
- Samples of Materials tested in the Mansoura University by quality engineer.
- Engineer in the follow up Department is responsible to monitor the quality.

Economic & budget control

1. The Cost sector of my company maintains separate files for each project and a register to record expenditures as follows.

- Material expenditure.
- Service expenditure.
- Financial expenditure
- Salaries

2. The tables which are used by the ` Planning and Monitoring control Sector are attached as Table (1), Table (2) and Table (3). The following items are monitored by the above mentioned tables.

Table (1): Comparing the materials used at work with the material issued by the stores. The materials used at work must be calculated using the invoices signed by the consultant.

TABLE (2): Monthly report that contains financial and technical data and % of progress actually executed against planned.

TABLE (3): technical compatibility comparing sub - contractors and company's invoices.

Following activities are carried out by my company to control the budget for all projects as follows:

- Holding a comparison between what may be defined as goals in future and what have been actually achieved.
- Clarifying the variation between the defined goals and actual ones.
- Analysing these variations with the aim of defining the relevant causes.
- Drawing the attention of Management Sector for any deviations from the set plan to enable them to take any corrective action.

Penalty Delay

The contractor has to complete the works of the project within the specified time .If the contractor fails to finish the work before the target date, penalty delay is to be paid by the contractor. Amount of penalty delay is as follow:

1. Up to 1st.week 1% of contract value.
2. From 1st.week to 2nd.week 1.5% of contract value
3. From 2nd.week to 3rd.week 2% of contract value.
4. From 3rd.week to 4th.week 2.5% of contract value.

5. About 4th week 4% of contract value. However, according to the conditions of agreement, the penalty should not exceed 15% of the total contract value.

The main contractor also imposes action against the sub contractor. The sub contractor is issued three warnings in every week after the target date. If the sub contractor fail to perform his works within this three weeks the contract is terminated and the second lowest tenderers is requested to do the balance work.

Information Technology

There are computer programmes in my company to be used in the management procedure .We connection with Internet. The following software is widely used for following works.

Excel 97	for quantity survey. Tables
Word 97	for writing.
Primavera ver.2	for planning.
Database	for all projects information
Auto Cad R-14	for drawings.
power Point , multimedia	

Problems faced in the project:

- The Site available for the Building was very narrow due to the main road in front, the existing buildings in the surrounding.
- Delay of elevators (subcontractor).
- Delay of imported the telephone system from Germany. (The company).

The project is completed at the target date.

Project completion

When the construction of the building was completed at the target date, it was handed over to a Committee, which consisted of Client and Consultant and 'SEDE'.

Provisional Acceptance Certificate

This is to certify that the works of the building have been successfully tested and inspected and are provisionally accepted. After a certificate has been issued, the client pays the contractor 5 % of Tender bond. Then the defect liability period commences from the Provisional Acceptance Date.

Defects liability period (maintenance period)

A period follows the Provisional Acceptance Date. During which the contractor is responsible for correcting any defects, which may emerge. This Period is one year in Egypt then we have at the end of this year the final acceptance certificate for the final project.

Final acceptance certificate

This is to certify that the works of the building have been successfully tested and inspected and are finally accepted. After a final certificate has been issued, the client paid 5%, the final insurance.

After handing over the building to the client and after issuing the final certificate it is the responsibility of the client to maintain the building.

The contractor is responsible for 10 years to attend to any technical defect after the provision date (Egypt laws).

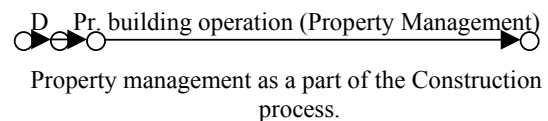
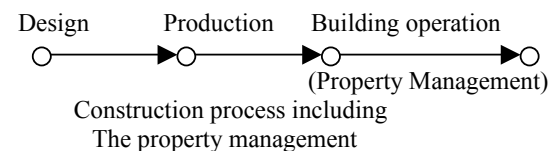
Property Management

The property management we do in Egypt is as follows:

- The owners maintain the private houses.
- When the flats are rented to tenants, money is collected from the occupants to maintain the building as the owner receives a very low rent (old rent) but at present new flats can be rented at a high rent.
- There are people who buy the flat from the owner with the land and these buyers form a union. This union collects money from all tenants of the flat to maintain the building annually. This money is deposited in the bank in order to get an interest.
- The relevant ministries maintain the Government buildings. The Government allocates money from the budget to maintain all Government buildings. The ministers have to plan and do the maintenance work annually.

Life cycle economy

When a project is considered, the period of design stage and the period of construction stage are relatively small when compared with the life of the building. For example, the period for both design and construction of a building may be two years. But the building will be used for more than hundred years. Therefore, It is very important to take into consideration the life cycle economy at early stage of the project.



The upper figure shows a common way of illustrating the stages of design, production and property management. The real proportions of these stage. Decisions made in the design stage are of great importance for the future property management The materials selected must be suitable with the climate of the place and the material chosen with cheapest and easy maintenance in the future.

Some of Swedish property management approach:

Property Management of the buildings in cold climate is very important because the building is subjected to rains, ice, moisture and cold etc like Sweden.

To succeed in property management must know about the condition factors affect success of Property Management as follows:

- Financing.
- Running cost.
- Maintenance costs.
- Tax regulations.
- Building techniques and building economics.

Organization and tasks

The property Management can be handled by the owner's organization or by external manager.

Most commons tasks within a property management concerning dwellings:

1. Administration and economy
 - Management and control
 - personnel administration
 - salary routines Etc.
2. running operation
 - technical control and running of heating , water , ventilation , etc
 - care taking of building , land , gardening , etc
 - Social contacts and matters of order.
3. Maintenance
 - Preventing maintenance
 - Immediate maintenance ('running maintenance')
 - Periodical maintenance (building , install. , land) etc

Capital costs

Capital costs included:

- The interest costs
- The description of the property value

An accounting system

Concerning property costs

- 1-Capital costs
- 2-Common running and maintenance costs
- 3-Running costs
- 4-Maintenance

Annual costs

The total annual cost for a building consists of:

Capital Costs +Running Costs + Maintenance Costs.

This annual cost estimating is needed in:

- For future budget during running property manage.
- For economic control during the design of building
- For choice of alternative solutions during the design.
- For choice of alternative solutions during running property management.

Experience to use in future projects:

- Training of Engineers and workmen.
Good training for workmen to improve skill in order to obtain good quality. Training of Engineers is also very essential and delegating responsibility to the labourers.

- The lack of computer support
In my company there is a computer sector but not connected to other sectors, which are also computerised. They are to be connected with each other (network) so that better information technology can be established and also with all sites (50 % of projects are computerised) to achieve good manage for projects.

- Material Administration
Materials cost about 45% of the total cost of the project and it must have high administration in all projects.

- Resistance to changes
There is still a resistance against introduction of computers in many companies and this will change when the new generation takes over and when the computer people under stands that they have to care much more about the users when constructing new programs.

- Cost estimating in early stage
From the lecture in this course there was a represent computer program for project cost estimating (ARGES) very easy to use and apply.

- From a project manager's perspective, there are six quality management concepts that should exist to support each and every project. They includes:
 - Quality Policy.
 - Quality Objectives.
 - Quality Assurance.
 - Quality Control.
 - Quality Audit.
 - Quality Program Plan.
- The push for higher levels of quality appears because customers are now demanding :
 - Higher performance requirements.
 - Faster product development.
 - Higher technology levels.
 - Materials and processes pushed to the limit.
- The great importance of Property management as a part of design stage.
- The vision of the future construction process:
 - Improve the motivation for every person in the process to make a good work.
 - Control the economy in the construction project from the very beginning to the end let the quantities successively are estimated (by using intelligent CAD models) and be issued when purchasing the contracts.
 - Integrate the quality management as a natural and dominating part of the planning.
 - Let the information technology into the construction process.

Conclusions

From the foregoing, I believe that important considerations in the production stage are necessary. Providing appropriate trainings to both the Engineers and the workmen would definitely improve their skills resulting to better Quality workman ships. The use of Computers to get the required information from different sites can be done easily compared to the manual system. Important documents such as cash flow project cost estimate and life cycle cost of the project can easily be done using Computers. Resistance to change, such as Computerization process could not easily be remedied and could take a larger time if the users lack appreciation of the modern technique.

I learned from the lectures that property management is a very important aspect that must be considered as early as the design stage. The owner must have a good idea from the start, how should the project be managed when completed to attain the maximum life and benefits to the owner as well as the users.

I believe that international standards such as ISO 9001, 9002 and 9003 could be good management systems to be adopted to improve the Quality of design, construction, Inspection and service.

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SOCIETE EGYPTIENNE D'ENTREPRISES
TABLE (2)
 PLANNING AND MONITORING SECTOR

MOUKHTAR IBRAHIN

YEAR /
 MONTHLY REPORT OFDATE

Zone : **Project** :.....
Sector Head : **Responsible Engineer** :
Employer : **Type of Contract** :
Consultant: **Start Date** :
Budget : **Completion Date** :

	Civil works	Mechanical works	total	Mechanical Works	Civil Works	
Estimated Value :						Latest Invoice Presented :
Executed To Date :						Date :
Remaining :						Latest Invoice Approved :
						Date :
Value of Delay Penalty :	Date :					Latest Invoice Collected:
Value of Deductions :						Date :

EXECUTION PROGRAM :

Work Type	Original Plan	Modified Plan	Work Executed	%	remarks
Civil					
Mechanical :					
Total :					

Profitability Percentage : Till : Accumulated : During the Year :

Civil Mechanical Total

Civil Mechanical Total

%	%	%
---	---	---

Percentage of Work Executed

%	%	%
---	---	---

Percentage of Elapsed Period

EXECUTION STATUS:

MATERIALS.

LABORS:

EQUIPMENT:

QUALITY CONTROL :

SAFETY SYSTEM: