

Organizational Structure & Management Procedure in Pakistan Public Works Department

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Abstract

It is essential to Pakistan's national economic prosperity that infrastructure is constantly developed at rates comparable with other developed economies, as well as a policy is devised for efficient and effective infrastructure management in the country to preserve country's national asset. This paper attempts to present the jurisdiction, organizational structure, culture and the project management application procedures to construction projects of a major public infrastructure development and maintenance organization in Pakistan, the Public Works Department (PWD). The paper initially focuses on describing the organizational structure of PWD and the culture within the organization that affects the development, implementation and managerial procedures adopted on projects. It then examines the funding and bidding mechanisms involved that largely affect the selection, resource development, and quality and risk management control of projects. The paper further attempts to delve into the policies and procedures usually implemented by the organization for the selection, planning, monitoring and control of projects, in particular the team development, responsibility assignment and training mechanisms for the management control of projects. To illustrate the mechanisms and procedures, a number of project case studies have been included for the purpose of examining the organizational project management setup and approach from a neutral perspective.

Keywords

Organizational Structure, Culture, Project Management, & Application Procedures.

1. Introduction

Pakistan Public Works Department owes its existence to the pre-independence British era i.e. 1949 where all the works relating to various departments were executed by the Central Public Works Department of India. The department, in addition to the execution of works related to government organization was also responsible to provide back up engineering & services to the British Army on peace station through the construction of small air fields etc and to provide logistics for the British Army in connection with its operational duties. After independence, the Central P.W.D. of India was bifurcated and renamed as *Pakistan Public Works Department in Pakistan*.

All the functions assigned to Pakistan Public Works Department are regulated in accordance with guide lines given in Central Public Works Accounts Code, Pak: P.W.D Code, Pak: P.W.D Manual Chapter-VI, and General Financial Rules Volume-I & II. The rules defined in these books were basically framed for

implementation in Central Public Works Department under British Rule and are applicable till now *mutatis-mutandis*.

2. Functions of the Department

The following tasks, functions and objectives have been assigned to Pak: PWD.

- Acquisition of land and development of Sites.
- Maintenance of all Federal Govt. buildings except those financed from Defence Budget.
- Maintenance and Furnishing of President's Camp Office, Prime Minister Secretariat, Prime Minister House, Minister's Enclave, Supreme Court Judges Enclave/Residences, State Guest House, and other buildings all over the country.
- Construction of Office and Residential Accommodation for Officers and Staff of Federal Government.
- Management of Federal Lodges in various cities of Pakistan.
- Custody of land and Buildings owned by Federation (Housing & Works Division) and collection of revenue there from.
- Co-ordination of Civil Works Budget.
- Supervisory of Execution of Federal Government funded works.

3. Organization

Pakistan Public Works Department has full-fledged Planning, Architectural and Design Wings functioning under Director General, Pak PWD. The salient features of the Planning, Architectural and Design Wing are as under:-

3.1 Planning Unit

Headed by Chief Engineer (Planning). This unit has planning section, quantity surveyor section, structural section, design section and Inspection and Vigilance Section. Each section is controlled by a Superintending Engineer with requisite staff attached to these sections.

3.1.1 Architectural Section

Headed by Senior Architect and assisted by Architects and staff.

3.1.2 Structure Section

Headed by Superintending Engineer (Str) and assisted by Executive Engineers and other staff.

3.1.3 Services & Planning Section

Headed by Superintending Engineer (S/P) and assisted by Executive Engineers and other staff.

3.1.4 Quantity Survey Section

Headed by, Superintending Engineer (Q.S) and assisted by Executive Engineers and other staff.

3.2 Functioning Units

3.2.1 Regional Chief Engineer

There are four provinces and accordingly four Regional Chief Engineers, are working in the Department, which are assisted by the Staff Officers (Superintending Engineer) Executive Engineers (QS) and other staff. The Regional Chief Engineer is administrative head for efficient administration and general professional control devolve on him within his jurisdiction. He is responsible for co-ordination with the

administrative departments, in connection with planning and designing of all projects. He controls the financial matters with the help of Deputy Budget & Finance Officer, in connection with the maintenance of the accounts and enforcement of strict adherence to the regulations concerning disbursement of money to the Divisional Office.

3.2.2 Superintending Engineer (Site Control)

Administrative Head of Site Control Unit (Circle Office). Inspection of projects under Circle Office. He has to watch of progress, and examination of Primary Accounts of Divisional Office. Yearly Inspection of Divisional Offices. To see management of various works in progress in jurisdiction of divisions under his control.

3.2.3 Executive Engineer (Site Control) Head of Divisional Office

The Executive Unit of department is headed by the Executive Engineer. *This unit has basic role in functioning of the department.* He is responsible for execution and management of all the projects/works falling under his jurisdiction. It is part of his duties to organize & supervise the execution of projects/works and to ensure that they are suitably and economically carried out with good workmanship and material of good quality.

He is also custodian of the basic record of the department, i.e. record pertaining to projects/works, surveying and mathematical instruments with the help of four Assistant Executive Engineers as well as budgetary provisions, Cash Books, Cheque Books, Works Accounts, Collection of Revenues, finalization of accounts after completion of projects/works and affording all sorts of information to higher units of the department with the help of Divisional Accounts Officer.

4. Preparation of Project

The basic data of the project is prepared by the Executive Engineer on the Project Cost-I Proforma which fixes the scope, cost and time schedule of the project. The scope of the project is determined by the requirements given by the Sponsoring Department. The preliminary plans (line plans) are prepared by the Architect in consultation with the Sponsoring Department. The Executive Engineers at this stage acts only as coordinator between the Sponsoring Department and the Architect in respect of cost of construction so as to produce the most economical plans to meet the essential needs of the department concerned. After finalization of preliminary plans, the rough cost estimate is prepared by the Executive Engineer, which is incorporated in the P.C.I. Proforma. The rough cost estimate gives an idea of the total cost of project. The PC-I Proforma also fixes the time schedule of the project with an idea to complete it in a specific time at most reasonable cost. The funds are made available in the Annual Development Programme, in accordance with the phasing of the Project Cost-I Form. The Project Cost-I Form prepared by the Sponsoring Department with the help of P.W.D. is then submitted to the following Forums for approval and accord of Administrative Approval & Expenditure Sanction.

Executive Committee for National Economic Council Headed by the Prime Minister of Pakistan: -	Above Rs.500.000 million
Central Development Working Party Headed by Chairman Planning Commission	Upto Rs. 500.000 million
Departmental Development Working Party Headed by Administrative Secretary	Upto Rs. 40.000 million

The Project Cost-I is examined, discussed, modified and finally approved in the committee mentioned above. In certain cases, the project is discussed in a number of meetings spread over months before the approval is accorded.

4.1 Budgetary Procedure & Financing

The sponsoring Department demands funds in the Annual Development Programme as per phasing in the PC-I. Priorities of the Project change from year to year. Funds are assured to complete the project what is contemplated in the PCI Form. After the new scheme takes the status of on-going scheme, the yearly funds have to be arranged by the P.W.D., in the Annual Development Programme. The sponsoring department is relieved of the responsibility of arranging funds and after the first year, the project practically becomes a baby of the P.W.D. who have to carry it upto the completion stage and then hand over it to the sponsoring department as a finished project.

4.2 Detailed Design

After arrangements of funds, the next stage is the preparation of detailed design of the projects approved by the ECNEC, CDWP & DDWP. This is a stage where preliminary plans are developed into detailed plans and working drawings. This is again a combined effort of Sponsoring Department, the Architects and the Engineers. After detailed designing, estimates are prepared and technically sanctioned by the P.W.D. If the amount of technically sanctioned estimate exceeds more than 15% of the amount of administratively approved amount, the Executive Engineers refer the case back to the Sponsoring Department for getting revised administrative approval from the competent forum as mentioned at Para No.4 above. If the amount of technical sanction remains within 15% of the amount of the administrative approval, the tender documents are prepared by the Executive Engineer and work is advertised for letting out to the approved registered contractors.

4.3 Technical Sanction Stage

The technical sanction is obtained prior to the start of any project/work. The technical sanction tantamount to a guarantee that the proposals are structurally sound the estimates are accurately calculated and based on adequate data. In process of the technical sanction, due care is exercised to incorporate the detailed requirements in the estimates so as to avoid any major change during execution stage. The tenders are invited on the basis of technically sanctioned estimates by the various authorities empowered by the government of Pakistan through executive orders.

4.4 Construction Stage

The Contracts are awarded to the contractor by the competent authority after receipt of competitive bids through wide publicity in the Press and formal letter to start the work is issued to the contractor. Periodical progress reports are sent to the sponsoring department wherein the bottlenecks and difficulties faced by PWD are brought into their notice.

In the above-mentioned stages through which the project passes, it has been found that in most of the cases the sponsoring department renders assistance to the P.W.D. The sponsoring departments take interest in its execution and this lead to successful completion. Unless both the sponsoring department and the P.W.D. work in close collaboration with each other, it is not possible to achieve the desired results. To solve other problems the Project Directors are being nominated by the sponsoring department for each project, which is entrusted to the P.W.D. who should be one of the Senior and competent officers of the sponsoring department capable of taking independent decisions. In this way the Planning and Design Organization of P.W.D. and the Engineer-in-Charge of construction is facilitated to handle the project smoothly through various stages.

5. Rules to be observed during Construction of Projects/works.

In accordance with the departmental frame work and instructions from Finance Division, Planning Divisions etc the following contracts Forms are currently being used:-

FORM CPWD-7	For contract Costing Rs. 10.000 million and below.
FIDIC FORM for smaller projects	Form Contracts costing Rs. 50.000 million and below but above Rs. 10.000 million.
FIDIC FORM (For Bigger Projects)	For contracts costing more than Rs. 50.000 million.
FORM CPWD-9	Supply of Material.
FORM CPWD-8	Lump Sum Contracts of any magnitude.

The specific procedure has been spelled out in each Contract Form and powers have been conferred upon the offices of Pakistan Pubic Works Department to manage the project, during execution process as under:-

5.1 Superintending Engineer/Project Director

All the works are executed under the directions and subject to approval in all respect of the Superintending Engineer of the Circle. The Superintending Engineer has to direct that at what point or points and in what manner the work is to be commenced and carried out. In order to ensure quality, workmanship and use good material, the Superintending Engineer has to pay surprise inspections of each work in progress, which is conveyed, to lower formation for compliance of his observations/directions.

5.2 Executive Engineer

He is over all Engineer-in-Charge of the projects. The Executive Engineer has to operate all the clauses of contract agreement on behalf of the delegated powers by the President of Pakistan, make payments, observe the completions schedules, takes actions against the contractors in case of breach of any clause(s). He has to inspect the projects frequently to ensure quality, workmanship and use of good material.

5.3 Assistant Executive Engineer

He is responsible to the Executive Engineer for its efficient execution of the works under his control. He is under obligation to see that the works are carried out with good workmanship and with material of good quality in accordance with the standard specifications. He is also responsible to ensure rectification of defects pointed by his superiors during inspection of works and when work is completed in all respect it is in accordance with the drawings, design and specifications. He has to verify the bills submitted by the contractor or his sub ordinates. He is also 100% responsible for measurements of hidden items.

5.4 Sub Engineer

He is responsible for supervision of work during the course of execution. He has to perform his duties with the help of contingent staff specifically appointed on a particular project. He has to check each and every measurement recorded by the contractor and in case the contractor fails to do so, he has to record these measurements himself. He is also responsible to ensure use of good quality construction material and bring into notice of his superiors any bad work or any thing militating against the interest of government on the part of contractor.

6. Measures to ensure Quality of Work.

After issuance of letter of commencement, the construction material i.e. steel, burnt bricks, crush, sand and in later stages wood brought/to be brought at site by the contractor is subject to testes from the recognized material testing laboratories. The samples are collected at random and if any test report does

not meet with the standard specifications and parameters fixed by the department, the material is liable to rejection on its very outset and it is obligatory upon the contractor to remove the rejected material and replace it with material of good quality.

During the course of execution of work the Executive Engineer collects samples and test cubes made of blocks roof concrete, floor concrete etc in presence of the contractor or his authorized representative. The samples and test cubes will be got tested for the comparative strength at a testing laboratory. These will be regarded standard tests which will be communicated to the contractor in writing before any item "in which cement is required to be used is taken in hand. During the progress of the work, the Superintending Engineer may cut pieces from finished work or have test cubes made from cement being mixed at site and send the core or test cubes to a laboratory for technical examination to ensure that the work is in conformity with the specifications as laid down in the contract.

In order to safeguard the interest of government, the security @ 10% of work done is deducted from each bill of contractor which is refunded to him after 3-months in case of buildings work and 12-months for road work. This security is released after recording final completion certificate by the Executive Engineer being over all in charge of projects.

7. Project Case Study

- Burn Care Centre, PIMS, Islamabad (*completed in Feb,2007*)
- Cardiac surgery Unit, PIMS, Islamabad (*under construction*).

7.1 Burn Care Centre PIMS, Islamabad

Highly sophisticated Burn Unit, have been established all over the world. Modern Burn Centre has reduced its complications and death rate at least by 50%. The need for well-equipped unit in the Capital Hospitals was felt because of the 'frequent' incidents of people receiving burn injuries. According to a study, carried out in 2002, the four major hospitals of Rawalpindi and Islamabad received 294 burn cases, out of which 217 (73.8 per cent) patients died owing to lack of proper environment, and hospital-acquired infections.

It will serve as center of excellence for treatment of burn cases in this part contrary. Center will act as a national and referral center for burn victims from all over the country, being a center of training of doctors and other supporting staff. It will provide facility for clinical and fundamental research. Center will provide treatment to Federal Government Employees and their families, general public of Islamabad/Rawalpindi and surrounding areas.

7.1.2 Benefits of the burn centers shall be visible in shape of;

- Reduced mortality.
- Reduced morbidity.
- Minimum length of stay.
- Reduced disfigurement of the patient after treatment.
- Improved function and rehabilitation.
- Training of staff from peripheral hospitals.
- Training institute for general surgeons and nurses.

7.1.4 Cost of the Project

- Capital cost of the Project. 398.000 Million.

- Annual Operating cost after completion of Project. 121.000 Million.
- Total covered area. 31962 Sft

7.1.5 Project benefits and Analysis

The benefits of the burn shall be;

- To provide international standard burn care facilities for victims of house violence, work place bomb blasts, and road accidents by establishing burn care center of International standard.
- Training and upgrading skills of doctors/paramedics/nurses in Specialized Burn Care Management.
- To disseminate awareness/training of technicians and other lower staff in the field of Burn Care Management.
- To reduce mortality & morbidity occurring due to various types burns.

7.2 Cardiac Surgery Unit PIMS, Islamabad

The establishment of cardiac surgery would help in both prevention of further morbidity and would reduce mortality by corrective procedures. Without surgical backup a lot of medical procedures, which the present cardiology set up is capable of doing, cannot be undertaken. Cardiac surgical unit is, therefore, also essential to fully utilize the facilities and services already available at the cardiology department. This will transform the existing unit into a State of the Art Cardiac Center, capable of providing all kinds of most advanced cardiac care facilities to the sick. It will further serve the purpose of advanced medical Research Center in the field of cardiology and will provide training facilitates of medical professionals. At present despite the lack of facilities in the existing cardiology department, the monthly patient attendance is about 3000. These numbers would rise substantially, if proper cardiological care facilities are provided to the patients.

7.2.1 Cost of the Project

- Capital cost of the Project. 551.659 Million.
- Annual Operating cost after completion of Project. 65.848 Million.
- Total covered area. 24480 Sft
- Stipulated date of completion. December, 2007.

7.2.2 Project benefits and Analysis

The Primary and secondary prevention strategies reduce the incidence and prevalence of heard diseases and their complications to a great extent. This preventive strategy is multidimensional.

- To health educate the people, which is intended to increase the understanding of people about disease, associated risk factors, and their modification etc.
- To produce competent professionals including doctors, nurses, and other health care professionals. They not only health educate the people, but also employ strategies in terms of pharmacology and interventions to reduce morbidity and mortality of the disease.