

working drawings, and details and specifications for the guidance of construction. The design includes basic layout concept and development, calculations to determine strength and capacity requirements, and selection of equipment and materials. These engineering services insure safe, smooth, and effective construction.

(4) *Construction coordination*.—Coordination of construction includes engineering assistance and administration, as the agent of the client, in preparing contract documents, obtaining and evaluating construction contract bids, reviewing schedules and progress during project inspection, checking materials and equipment purchased, inspecting contractors' shop and working drawings, outlining test procedures, reviewing and approving changes, checking costs and payments, supervising final tests and inspection, and preparing record drawings. Engineering supervision may be on occasion an intermittent basis but is generally on a continuous basis for the entire construction period.

(5) *Supervision of operations*.—The consulting engineer provides this service for structure and facilities as well as for operating systems such as production lines, process plants, automated control installations, and other systems. The service may be necessary for several years after completion of the project. It combines experience gained in operating comparable equipment in other plants with related operating techniques.

(6) *Consultation on special problems*.—The consulting engineer offers services in such areas as utility rate studies, value of property, patents, technical expert testimony in litigation, research on methods, review of operating procedures, and assistance in financing.

B. BASIS OF CONTRACT

Professional services may be obtained by the client under a wide variety of contractual arrangements. These can be tailored to suit the particular requirements of the client or project.

Many public agencies and private organizations require professional advisory services on a continuing basis and find it advisable to enter into annual retainer agreements with professional services firms. The client is thus assured of a continuing contact with an engineering organization thoroughly familiar with operation and procedures advisory services available on short notice. The annual retainer agreement generally provides for a certain amount of professional service at a set rate, agreed to in advance.

The client may prefer to select a consulting engineer for a specific project, or bond issue, when and as needed. In either case, the individual consultant or consulting firm should be selected on the basis of past experience, available organization personnel, and other professional qualification. Several engineering organizations may be considered for each assignment, however, final negotiation should be limited to the individual or firm felt to be most qualified for the undertaking.

C. QUALIFICATIONS AND STANDARDS OF PERFORMANCE

Qualifications are demonstrated by professional registration and by the record of past accomplishments and extent of available professional personnel and experience in the fields involved.