Role of the Engineer

What is an "engineer"? This term has become somewhat generic and has been applied informally to almost any task. We use the term in the traditional sense of "one who applies education and experience to the physical elements of the world to produce a product or system".

In a short description, the Engineer works on behalf of the client to implement a technical project. The Engineer may provide 'hands-on' technical services such as an equipment technician or a programmer, but typically Engineering services are focused on planning and implementation of large scale projects where technician work typically entails task oriented sub parts of the overall project. The role of the Telecommunications Consulting Engineer is to provide key support, advice, and services to our clients. Our clients are typically companies who own or wish to own and operate telecommunications systems and networks.

The term "Professional Engineer" has special meaning, and refers specifically to an individual who has met state-mandated criteria for education, experience, and commitment to the welfare of the public. Every state has laws regulating the practice of engineering. A person or company wishing to offer engineering services to the public is required to obtain registration or licensing from the state board of engineering regulators. When a registered engineer is supported by employees and staff, the company is often referred to as "the Engineer", or the "Engineering Firm". Regardless of organization type, the individual licensed by the state has a personal obligation to ensure that the services meet state legal standards and conform with industry practices.

In a typical relationship, the Engineer works with the management of the client company ("the Owner") to identify operational objectives, technical requirements, and expected costs to construct some system or product. In this early process, the Engineer is often engaged in a very close and confidential relationship with the Owner. Often non-engineering factors affect the strategic and tactical planning, demanding the Engineer to provide more generalized "consulting" services. The Engineer either has in-house resources to address regulatory and financial implications, rules and requirements, or the Engineer obtains these services from third parties. Often it is in the Owner's best interest to require the Engineer to work with the Owner's existing regulatory and financial consultants, and with the Owner's attorney.

Once a project has been identified, and the general objectives are established, the Engineer prepares the detailed design and establishes technical specifications for the equipment, product, or system desired by the Owner. The resulting Plans and Specifications are used to guide the equipment design, manufacturing, delivery, construction, installation, turn-up and testing. The Plans and Specifications often include a Statement of Work, detailing how and where the work is to be accomplished. In a typical scenario, a Contractor is hired to obtain the equipment and provide the labor and services necessary to accomplish the work. The Engineer packages the Plans and Specifications with purchasing documents and solicits bids for the work on the Owner's behalf. Once the bids or proposals have been received, the Engineer evaluates the bids, identifies any technically non-compliant proposals, and makes a purchase recommendation to the Owner. If the recommendation is not satisfactory to the Owner, the Engineer coordinates a resolution to satisfy the Owner's concerns. The outcome of this phase of

the work is one or more contracts as required to obtain the system or equipment needed by the Owner.

Once the Contractors have been selected, the role of the Engineer shifts to a combination of Project Management, Contract Management and Inspector. The key to this phase is contract management, where the Engineer is tasked with keeping the Contractor on-schedule, identifying any changes that become necessary, and documenting contract changes as agreed to by the Contractor and the Owner. The Engineer balances the technical capabilities of the system with schedule and cost.

If changes in any of these items affect the Owner's objectives, it is likely that there will be an impact to the other two. For example, if the Owner doubles the size of the project, the Contractor will need additional time and/or funding to meet this new objective. As the work progresses, the Engineer inspects the construction and/or installation periodically to ensure that the equipment and work is being accomplished in accordance with the contract. If corrections are required, the Engineer communicates this to the Contractor.

As progress is made, the Engineer provides recommendations to the Owner regarding payments to the Contractor as required by the contract. At the end of the process the Engineer performs tests, conducts a final inspection and reviews the Contractor's work. If the Contractor has meet the requirements, the Engineer and the Owner accept the system and the Engineer recommends that the Owner make the final contract payment.

Ultimately, the Engineer is responsible for ensuring that the project meets the Owner's expectations, is technically sound, and does not endanger life and safety of the public or property of others.

The Engineer works between the Owner and the Contractor,
ensuring the Work meets the Owner's goals and objectives

The Engineer:

Serves the client by implementing technical and/or construction projects

Planning

- Assists the client (the 'Owner') with planning and strategy
- Identifies the Owner's needs and objectives
- Prepares financial & cost estimates
- Prepares or assists with preparation of financial and business plans
- Documents plans and project initiatives
- Identifies project specific requirements
- Researches equipment, technologies and technical approaches
- Assists the Owner with the preparation of loan application documents

Project (Pre-Award)

- Prepares Plans and Specifications
- Prepares procurement documentation
- Identifies and qualifies potential vendors
- Assists with solicitation and receipt of bids or proposals
- Evaluates proposals and makes recommendations
- Assists with preparation of contract documents

Project (Implementation)

- Coordinates Contractor schedules with Owner
- Serves as liaison between Owner and Contractor
- Monitors & reports on progress
- Identifies problems or potential problems, seeks alternatives
- Prepares contract change documents
- Observes progress of construction, reports to Owner
- Recommends progress payments to Contractor
- Inspects the Contractors work and product
- Performs or supervises tests to ensure contract compliance
- Verifies completion of the Contractor's Work
- Prepares contract closeout documents and recommends closeout

Supporting Tasks

- Prepares drawings, maps and reports as requested by Owner
- Coordinates with Regulatory consultants and authorities
- Coordinates with Owner's other consultants (financial, legal)
- Seeks and contracts with other engineers or technical specialists
- Prepares and submits applications to government entities on behalf of Owner
- Other tasks as required by the Owner