

Report on a Case by the Board of Ethical Review

Case No. 62-6

Competitive Bidding—Research and Development

Facts:

Professional engineers often own, manage or work in organizations which engage primarily in research and development. In recent years there has been a substantial increase in this type of engineering or scientific activity. The normal procedure for securing contracts for research and development projects from Federal agencies (which constitutes a major part of R&D work) includes the following steps:

- a. The government agency advertises a need for a study of a particular technical problem.
- b. Interested firms reply, setting forth their capability for the work, including experience, equipment, personnel and financial condition.
- c. On the basis of these replies the agency invites one or more of the firms deemed to be qualified to submit a proposal, based on the government's statement of the work.
- d. The R&D firm presents a technical proposal and a financial proposal, including a breakdown of estimated costs covering such items as labor, overhead, materials and travel. More than one firm may be invited to submit information and a proposal during this stage.
- e. Agency officials may hold conferences with officials of the firm or firms to further evaluate the technical and financial aspects of the proposal. The agency then makes its selection of the firm and negotiates a contract. Generally, the financial arrangement establishes the items of cost which are allowable and stipulates a fixed fee for profit of the firm.

Question:

Is it ethical for engineers to competitively negotiate R&D contracts under the procedure outlined?

References:

Canons of Ethics-Canon 26- "He will not compete with another engineer on the basis of charges for work by underbidding, through reducing his normal fees after having been informed of the charges named by the other."

Rules of Professional Conduct-Rule 48-"The practice of engineering is a learned profession, requiring of its members sound technical training, broad experience, personal ability, honesty and integrity. The selection of engineering services by an evaluation of these qualities should be the basis of comparison rather than competitive bids."

Rule 49-"Competition between engineers for employment on the basis of professional fees or charges is considered unethical practice by all professional engineering groups. Any engineer who is requested to submit a competitive bid to an owner or a governmental body should remove himself from consideration for the proposed work."

Rule 50-"It shall be considered ethical for an engineer to solicit an engineering assignment, either verbally or written. Such solicitation may be in the form of a letter or a brochure setting forth factual information concerning the engineer's qualifications by training and experience and reference to past accomplishments and clients.

"Should the engineer be asked for a proposal to perform engineering services for a specific project, he should set forth in detail the work he proposes to accomplish and an indication of the calendar days required for its accomplishment. The engineer's qualifications may be included if appropriate. A statement of monetary remuneration expected shall be avoided until he has been selected for the proposed work.

"Should the owner insist upon a statement regarding remuneration prior to selection of the engineer, the engineer may designate the recognized professional society minimum fee schedule for the particular type of service required in the state geographical area where the work is to be done."

Rule 51-"He will take a professional attitude in negotiations for his services and shall avoid all practices which have a tendency to effect adversely the amount, quality, or disinterested nature of professional services; such as charging inadequate fees for preliminary work or full services, competing for an engineering assignment on a price basis, spending large amounts of money in securing business or consenting to furnish monetary guarantees of cost estimates."

Discussion:

For the purpose of this discussion we employ the definition of research and development given by the National Science Foundation (Funds for Research and Development in Industry, 1958, Surveys of Science Resources Series, NSF 61-32), the pertinent parts of which read:

"Research and Development include basic and applied research in the sciences and engineering, and the design and development of prototypes and processes. Excluded from this definition are routine product testing market research, sales promotion, sales service, research in the social sciences or psychology, and other non-technological activities or technical services.

"Basic Research includes original investigations for the advancement of scientific knowledge that does not have specific commercial objectives, although such investigations may be in fields of present or potential interest to the reporting company.*

"Applied Research includes investigations directed to the discovery of new scientific knowledge that have specific commercial objectives with respect to products or processes. This definition of applied research differs from the definition of basic research chiefly in terms of the objectives of the reporting company.*

"Development includes technical activities of a non-routine nature concerned with translating research findings or other scientific knowledge into products or processes. Development does not include routine technical services to customers or other activities, excluded from the above definition of research and development."

*This definition was developed by the Harvard Graduate School of Business Administration, in cooperation with the Department of Defense, National Association of Manufacturers, and Industrial Research Institute.

We have previously held that under the Rules of Professional Conduct an engineer may not ethically provide the client with a statement of the estimated charges for engineering services prior to selection for the work (BER Case No. 60-2). It is clear that under the facts stated the engineer or firm in R&D work would be required to violate this restriction. The full NSPE policy on competitive bidding for professional engineering services was set out in Case 60-2 and need not be repeated here. However, because of its direct reference to these facts we restate the definition of competitive bidding:

"Competitive bidding for professional engineering services is defined as the formal or informal submission, or receipt, of verbal or written estimates of cost or proposals in terms of dollars, man days of work required, percentage of construction cost, or any other measure of compensation whereby the prospective client may compare services on a price basis prior to the time that one engineer, or one engineering organization, has been selected for negotiations. The disclosure of recommended minimum or median fee schedules prepared by various engineering societies is not considered to constitute competitive bidding."

The new question which is presented in this situation is whether research and development constitutes "engineering services" and an "engineering assignment" contemplated in the Rules and the NSPE policy. We have discussed previously the fact that professional engineers may and do engage in activities which are not subject to the Canons or Rules (BER Case No. 60-3).

Research and development embraces knowledge and skill in a variety of the sciences and may embrace facets of management skill, operations techniques, and engineering. Also, in accordance with the definition given it involves the development and application of new scientific and engineering knowledge. The R&D function, which ordinarily requires a team effort of many disciplines, must be regarded as a whole. It would be difficult, if at all possible, to itemize and separate those functions which are engineering and those which are other disciplines.

We think it is apparent from the wording of the Canons and Rules that they apply to services which are directly related to an engineering function; Le., the design of structures, machines or processes: It is noteworthy that the definition of the "practice of engineering" in the Model Engineering Registration Law does not refer to research and development activities, while at the same time, it contains a comprehensive list of engineering projects which are covered: public or private utilities, structures, buildings, machines, equipment and processes.

R&D projects are more in the nature of contracts to produce an end-item or prototype rather than of the traditional services concept found in engineering.

Conclusion:

The Rules regarding competitive bidding for professional engineering services are not applicable to competitive negotiation of research and development contracts of the type defined. Inasmuch as the Rules regarding competitive bidding are not applicable, it is not unethical for engineers to competitively negotiate R&D contracts of the type defined and under the procedures outlined.

Board of Ethical Review:

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