

Chapter 9. HOW TO HIRE AN ENGINEER

A. Introduction

Hiring an engineer can be a difficult task. The engineer is responsible for planning, designing, and overseeing construction projects which can commit communities and special districts to substantial expenditures. Often the merit of this work must be accepted at face value, if the community or benefit district is unfamiliar with the technical aspects of the proposed project. However, the more the community has learned about wastewater system alternatives and the process of carrying out a project, the more successful the relationship with the engineer can be.

Prior to beginning the process of hiring an engineer, you should do a comprehensive review of your community: What exactly do you have? What do you need? What do you want? What can you afford? In other words, know your expectations, as well as your limitations. Preceding chapters in this manual should assist you in answering these questions.

When is it necessary to have a registered professional engineer assist your community or district? A registered professional engineer is needed to prepare the preliminary engineering studies that are part of federal and state loan or grant applications. An engineer is needed to prepare final design and contract specifications for construction of new wastewater facilities. In addition, a professional engineer will probably be required for renovation, rehabilitation and repair projects. It is not necessary for the engineering firm to be based in Kansas, but the plans submitted for approval must bear the stamp of a registered professional engineer licensed to practice in the State of Kansas. If there are questions, contact KDHE at (785) 296-5525 for clarification.

When selecting an engineer for a *preliminary* design, you will need to go through the selection process as outlined in this chapter: identification, notification, checking references, interviews, selection, and contracting. These steps will assist you in meeting the requirements of funding sources if you are using outside funds to pay for your preliminary study.

When selecting an engineer for the *final* design and construction of your project, you, again, will need to go through these selection steps, but will have to go further into contract negotiations. The Community Development Block Grant Program (CDBG) in Kansas is allowing applicants to pre-select their engineer for the preliminary engineering report and the final design six months prior to the grant application due date. The engineer will need to be selected in a manner similar to the selection of an engineer for the final design. The initial Request for Qualifications (RFQ) for CDBG pre-selection should stipulate the applicant is seeking the services of an engineer for developing both the preliminary engineering report and the final design. However, CDBG funds cannot be used to pay for the preliminary engineering report required for the application for the grant funds.

Funding sources and KDHE have specific requirements for the engineering work, applications, and documentation. The requirements can cover items such as forms to be used, subjects to be included in plans and designs, deadlines, ranges of fees, and a variety of other items. Each agency may have different requirements and they can change with time. The community and the engineer must both be aware of the current requirements, so the work produced is correct for its uses. For instance, RD and CDBG have preprinted “How-to” forms for the procurement of engineering services.

A few terms to know are:

- RFQ – Request for Qualifications
- RD - USDA/Rural Development - formerly known as Farmers Home Administration
- EPA - Environmental Protection Agency
- CDBG - Community Development Block Grant Program

Depending on the “community,” the group selecting the engineer may be a town council, county commission, a review committee, or the board of a sewer district. This chapter will refer to this group as the “Board.”

B. The Selection Process

Selecting an engineer should be the result of a well-considered judgment. A proper selection may mean the difference between a well-planned, economical and successful project, or a mediocre one. The process of selecting an engineer is straight forward – similar to hiring any employee. The basic process involves the following seven steps.

1. Identify potential engineering firms (4-5 firms)
2. Notification of intent to contract for engineering services or RFQ
3. Pre-screen interested engineering firms (2-3 firms)
4. Check references
5. Interview engineering firm candidates (2-3 firms)
6. Select an engineering firm; negotiate costs
7. Contract for engineering services

Step 1. Identify Potential Engineering Firms (4-5 Firms)

Produce a list of engineers who may suit your needs. We suggest that you look for at least four or five engineers/engineering firms to contact. Finding engineers that meet your requirements may take some detective work and may even include looking out-of-state.

To find candidates, consider previous experiences you have had with an engineer and experiences of nearby districts or towns with similar projects. If the project will involve conventional, alternative onsite systems, or nontraditional collection systems, look for engineers who have had experience with them.

Usually regulatory and funding agencies cannot recommend engineers or provide lists of approved engineers. Depending on their policies, they may be able to give you names of engineers who have worked with their programs in the past or contacts at communities who have recently submitted projects, who may then be contacted for suggestions.

Engineering societies are another source of information. For instance, Kansas Consulting Engineers has a web site that lists its members with contact information and a printed directory that lists members by their specialty. When looking in directories, including the Yellow Pages, look for firms listed under environmental or civil engineering. (Note that large engineering firms that specialize in very large projects are often not organized to handle small projects such those discussed in this

manual.) The Kansas State Board of Technical Professions in Topeka can confirm that an engineer is registered as a Professional Engineer in Kansas. They have a web site that lists current registrations.

Step 2. Notification of Intent to Contract for Engineering Services

Issuance of a RFQ is the usual way to solicit an engineer. The RFQ is a formal notification of your intent to secure professional services. If you are using state or federal dollars in your project, be sure to check with the funding agency to see if they have specific requirements in the notification process. Most agencies will require a legal or public notice to be published in a newspaper of general circulation.

The RFQ should be accompanied by a cover letter that includes the contact persons in the community or district, telephone numbers (during regular business hours), the date the RFQ is due (provide a reasonable time frame for firms to respond), and/or constraints of the community or district for this project. Budget limitation information is helpful if the community or district has limited funds for a preliminary engineering study. In final design, engineering costs are usually part of the project cost and are more difficult to list as a constraint in the RFQ.

Prepare the RFQ in four parts.

Part 1 - General Information for the Engineer

Part 2 - Technical Requirements

Part 3 - Criteria for Selection

Part 4 - Scope of Work Statement

Part 1 - General Information for the Engineer

This section gives the name of the community or district issuing the RFQ, a brief description of the problem, information on time frames, type of contract (if known), response date and information on pre-proposal contacts in the community or district to clarify information or questions.

Part 2 - Technical Requirements

This section asks the engineer to give his understanding of the community's or district's problem to be addressed by their proposal by including a written description of the work to be performed (for both preliminary study and final design) and a list of the services and/or products (maps, plans, O&M manual, etc.) to be delivered as part of this project (for final design and construction). The engineer will include prior experience with related projects listing contact names, addresses and telephone numbers from those projects, and a list of personnel in the engineering firm who will be assigned to work on this project with their prior experience in similar types of projects.

Part 3 - Criteria for Selection

This section should describe the criteria you will use in evaluating the proposals, as well as

the point factors you have attached to each. This criteria list will help the engineer better understand your concerns and determine how to respond to them.

Note that some funding agencies do not permit the price of services to be listed as selection criteria. Costs of services are negotiated after the firms are selected on the basis of qualifications.

Part 4 - Scope of Work Statement

This section should include a brief statement of the type of work the community or district wants the engineer to perform on the system. The community or district can list in order of importance the steps you want the engineer to address for both preliminary and final design. In addition, list any items the community or district will provide during the time of construction (such as local inspection, soil samples and/or surveys, etc.).

In other words, list what you want done, what the engineer is to do, and what you as a community or district will do yourself. NOTE: The engineer will base his entire proposal on the listing of concerns given here.

An example of an RFQ published in a local newspaper asking for preliminary engineering proposals for a wastewater system follows. It should be tailored to fit your project.

A REQUEST FOR PRELIMINARY ENGINEERING QUALIFICATIONS

The Best Ever County Sewer District will accept proposals from qualified firms for engineering services on the District's wastewater system located near Good Town, KS.

Proposals will be accepted until month, day, year, and are to be submitted to: John Doe, Chairman of the Board of Directors of the Best Ever District, P.O. Box 123, Good Town, KS 66600. Telephone 785/555-5555.

Good Town is an unsewered community with inadequate and failing septic systems. It is looking for a solution to its wastewater problems. Possible solutions include central collection and treatment; alternative collection systems; upgraded, managed onsite systems; or other alternatives.

Due to budget constraints, the District has a limit of \$X,XXX available for this preliminary study (optional).

The District will use this study as part of its funding application to the USDA/Rural Development and to apply for a CDBG program grant in 2000.

An example of an RFQ published in a local newspaper asking for a final design and specifications engineering proposals for a wastewater system follows. It should be tailored to fit your project. Since this is relatively long, a summary could be published with instructions that the full document is available by mail or on a web site if the community develops one.

**SAMPLE REQUEST FOR QUALIFICATIONS (RFQ) FOR
FINAL DESIGN - CONSTRUCTION
ENGINEERING STUDY
REQUEST FOR QUALIFICATIONS FOR ENGINEERING STUDY
BEST EVER COUNTY SEWER DISTRICT, GOOD TOWN, KANSAS**

Part 1 - General Information

The Best Ever County Sewer District is requesting proposals from qualified engineers for an Engineering Study for a wastewater system project. The District is unsewered and has inadequate or failing septic systems. The District has 50 homes and 3 businesses and wishes to apply for CDBG funds for developing a wastewater system.

The District wishes to enter into a fixed price "not to exceed" contract for this study.

Deadline for receipt of the proposals is Month Day, 2000. Proposals should be sent to John Doe, Clerk, Box 123, Good Town, Kansas before that date. Mr. Doe is available for questions at 785/555-5555 during regular business hours.

Part 2 - Technical Requirements

Proposals shall include the following information:

- Prior experience in this type of project
- References from each project listed above, including name, address and telephone numbers
- Listing of the qualifications of your staff
- Estimate of person-hours needed to complete this work
- Current work load that might affect this project
- Statement of the technical approach to be used in this project, including potential alternatives

Part 3 - Criteria for Selection

Factors to be used to evaluate the proposals will include the following which are of equal importance.

- Qualifications and experience of the engineer
- Past experience with this type of project
- Experience in working with CDBG and other funding programs
- Present and projected workloads
- Capability to meet time and project budget requirements
- Location in proximity to the District

The District will not be responsible for costs incurred by any engineer in the preparation of their proposals. The District reserves the right to reject any and all proposals.

The District will review all proposals received and select the proposals that are most advantageous based on the evaluation criteria for oral interviews. Following the interviews, the District will negotiate a contract with the successful firm. All other respondents will be notified in writing.

Part 4 - Scope of Work Statement

This part should list the objectives of the RFQ along with a listing of all the known areas of concern to be addressed by the engineer. It should also include a list of services or products to be produced as part of the project. For example, original or reproducible copies of all maps and drawings, the number of copies to be turned over to the District, field and inspection notes, O&M manuals, training of operators, etc.

(This is where the District may list the services it will be responsible for. For example, construction inspection soils testing, local needs surveys, etc. In other words, identify the things the District will do for itself.)

Step 3. Pre-Screen Interested Engineers (2-3 Firms)

The Board should review the proposals. Whoever does the review should be familiar with the RFQ and the work to be accomplished through the contract that will be offered.

By using the criteria stated in the RFQ and the relative point values assigned to each evaluation factor, a rating form matrix may be established. A sample rating form matrix follows. Assign point values according to the importance of each factor to your district or community.

Project: Date: Evaluation Criteria	Firm A	Firm B	Firm C	Firm D
1. Understanding Problem: Firm's understanding of the objectives set out by the district or community.				
2. Qualifications: Specialized experience and technical competence to do the project.				
3. Meet Time and Budget: Past record of performance with respect to controlling costs, quality of work, and ability to meet schedules.				
4. Present and Projected Work Load: Conflicts that might affect the project.				
5. Soundness of Approach: Technique of analysis, sequencing and method of management.				
6. Location: Firm's proximity to and familiarity with the area of the project.				
TOTAL POINTS				

Have each member of the Board complete the rating form matrix to help narrow the selection. You may want to also ask yourselves the question, "What other considerations should there be?" and use that in your evaluation process. You may want to have an independent third party who is knowledgeable about your project complete a review of the engineering proposals in addition to your Board.

Step 4. Check References

The Most Important Step In The Selection Process Is To Check References.

As part of the RFQ, always request a list of prior clients, including the community/district name, description of the work performed, name, address and telephone number of a person in that community/district to contact. You may want to assign each Board member one or two engineering firms' references to contact. Contact several references for each firm being considered.

Take the time necessary to contact the communities, districts, or other previous clients for information on the projects listed as references by the engineering firms. This will help you to determine the quality of their work on projects similar to yours, and will also give you information on the community relations the firm/individual has had with previous clients.

A list of some useful questions you may want to ask in checking references follows:

Sample Questions For Checking References

- Were you satisfied with the quality and timeliness of the work?
- Was the engineer knowledgeable about the funding program you pursued and its related requirements?
- Was the engineer willing and able to work closely and effectively with your community or district Board?
- Were the costs and charges reasonable in relation to the work actually performed?
- Was the engineering firm able to meet the time frame and schedules agreed upon in your contract?
- Did the engineer have other projects scheduled that caused time delays in your project?
- Did you experience any problems that would discourage you from hiring this engineering firm again?
- Did they assist with your grant application to your funding source? Was that application successful?

Checking references before selecting an engineer is the most important action you can take to avoid becoming involved in an unsatisfactory consultant contract.

Step 5. Interview Engineering Firm Candidates (2-3 Firms)

Invite two or three of the strongest candidate firms to make an oral presentation and interview with the Board. It is not necessary to interview a large number of candidates to insure adequate competition, and it is unfair to ask firms to take the time and incur travel expense if they are unlikely to be selected. Remember, your time is involved, too.

In interviewing the candidates, you should take into consideration that some Board members may already have a “favorite” at this point in the process. The oral interview gives the engineer and the Board the opportunity to clarify points in the proposal.

Allow sufficient time for each interview (about 45 minutes to 1 hour) with 15-minute breaks in between. The Board needs to keep control of the interview process. Set time limits for the engineers’ presentations to allow time for questions from the Board. If possible, have a list of questions prepared by the Board before the interview. Ask each candidate the same questions from the list. This will give you a better feel for differences or similarities in the approach and ability of each firm.

Below are some sample questions to use during the interview process:

- What experience does your firm have in working with districts such as ours?
- What other districts have you worked with in the state?
- Are you familiar with our situation and the local area to know some of the particular needs we have?

- What is the design philosophy of your firm? Are you willing to look at innovative and/or alternative designs?
- What projects have you completed using innovative and/or alternative designs?
- What do you see as your duty as part of this project? Are there specific or itemized services that you do not provide? Detail the services you will provide in addition to design plans and specifications.
- Are you familiar with the various funding programs in the state for wastewater as they relate to sewer districts? What has been your experience in working with these funding agencies before? Has your firm assisted districts on grant writing and the application preparation? What has been the success rate of those applications?
- Who specifically in your firm would be working directly with our Board? Have they worked with other districts?
- What other projects are you currently working on that could take precedent and take time away from our project? Is your firm under any time constraints during the time frame of this project?
- How much of the work on our project would be subcontracted?
- If we select your firm, would it be acceptable for the firm to accept liability for the design of the project? If so, what would you have to do to assume that liability?

Request that the person who will be assigned to your project be present at the interview. In making your selection, remember to distinguish between the overall firm and the person(s) actually assigned to your project. A firm may have an excellent reputation, but that does not guarantee the competence of the person who will be working for your community or district.

Step 6. Select An Engineering Firm; Negotiate Costs

Based on the evaluation criteria, reference checks and interviews, you should now be ready to select an engineer. Price negotiation begins with the most qualified firm selected. If a satisfactory price cannot be negotiated, you may go the next firm to attempt to negotiate an acceptable price. Have legal counsel present at this point to be sure your community or district is fully represented and your interests are protected.

Keep in mind, the engineering firm hired for the preliminary study is not necessarily the firm you need to hire for the final design. If you prefer to hire a different engineer, you will go through the RFQ process again, unless you have pre-selected your engineer for the entire process.

Selection of your engineer should be based on qualifications, experience and approach to solving your problem. Competitive negotiation refers to the process of comparing qualifications. Specific costs should be discussed after the engineer has been selected.

Once the final decision has been reached, the community or district should notify the unsuccessful candidates in writing, as soon as possible.

Step 7. Contract For Engineering Services

After the engineer is selected, the community or district moves into negotiating a contract. The Board or engineer can prepare the work plan portion of the contract for review by both parties. The Board, attorney, and engineer should review this work plan carefully to make certain you understand what work will be performed by the engineer, what services will be provided by the engineer, and what items are the community's or district's responsibility. These negotiations between the community or district and the engineer will take place for preliminary studies, final design and construction plans.

The following negotiation, budget, and contractual information would be for communities and districts who are ready for final design and construction phases rather than in the process of doing a preliminary study. However, some of the information may be helpful to your decisions and discussions with your engineering firm whichever type of study you are having done for your community or district.

Once the work plan is agreed upon, you should also discuss and agree on schedules for completion and the firm's requested compensation. Don't be reluctant to require a detailed estimate of person-hours and costs and a compensation schedule. You can require the engineer to detail out the person-hours and costs according to the work plan in the RFQ or the work plan set out in the contract.

When contract negotiations are underway, remember to contact the federal/state funding agency you are working with for their review of the contract. Some agencies require specific contract forms, so rather than duplicate efforts, an early contact with the funder is important. In addition, some agencies recommend specific types of contracts. The "cost plus a percentage of costs" and "percentage of construction costs" method (contingent fees) cannot be used under some federally-funded contracts. So, again, be sure to check early on with the funding agency on contract requirements.

If possible, the Board should have an idea of your project budget and an estimate of engineering costs before receipt of the engineer's formal work plan. Consider comparative prices in your area for similar services. Potential funding agencies may also be a source of this type of information or may have their own schedules of ranges of acceptable rates.

At this point the Board can request that the engineer agree to a "not to exceed" budget. This would ensure that no unexpected fees would be added to the original work plan without prior consideration and approval by the Board.

In addition, as part of the contract, the Board may want to require a series of community-wide or district-wide public meetings to keep the residents informed on the progress of the project. The engineer may want to build the extra travel for these meetings into his budget. It is important that the district residents know at contract time what work will be done, how long it will take, and how much it will cost.

If the Board is unable to negotiate a suitable contract with the first ranked firm, negotiations should be formally terminated (in writing), and then negotiations initiated with the second ranked firm. This process should be continued until a suitable contract can be arranged.

When the engineering contract is signed, it is a binding legal document. The Board is responsible

for financing the work to be completed and paying for what gets done. There is no easy recourse for problems of higher than estimated costs or less than adequate work unless the contract is specific on a “not to exceed” budget, a time frame, and public meetings.

C. Tips On Working Successfully With An Engineering Firm.

Hiring and working with an engineer is a business arrangement. You are the client. The engineering firm works for you and its objective should be to evaluate the most appropriate alternatives and to help you select the best one for your community or to design the selected alternative. You do not need to be intimidated by an engineer.

The engineering firm is a business whose purpose should be to provide quality engineering services at a fair profit. The price that it negotiates for providing the services is based on the amount of work that the firm believes will be required to do the job based on the information given to them by the community. The engineering jobs that are needed for the systems described in this manual are small and unanticipated expenses can eliminate the profit.

To get the best results, the community needs to be as clear as possible about what it wants. However, the community is looking to the engineer to tell it what its reasonable alternatives are so it can communicate then identify what it wants in terms of a specific system . Both sides need to do their homework about the community’s needs and resources and the available alternatives, so they can communicate well with each other, especially being willing to listen carefully and not to decide on the answer before the work is done.

The community or district will have to live with the design and final cost of a project for a long time, so the selection of an engineer is no small matter.