by Elizabeth Dietzmann, JD

Engineering Contracts 101 – a crash course in negotiating and reading contracts

The problem: the single largest expenditure any water/wastewater system makes is on infrastructure. Building infrastructure requires the services of an engineer and engineers are hired and work under engineering contracts. Small water and wastewater systems have little if any experience in negotiating or understanding a standard engineering contract. They rarely have a lawyer review these contracts, and if they do, many lawyers are not familiar with engineering contracts. Often the only real experience many systems have with an engineering contract is a USDA form contract. It's my opinion that these contracts are archaic and do not cover all the necessary items. The solution: a crash course in engineering contracts – how to negotiate 'em – and how to read 'em.

The first step in hiring an engineer is the Request For Qualifications. The client prepares a Request for Qualifications and Experience statement, usually called the RFQ, because according to the U.S. Supreme Court, engineers are not supposed to bid for engineering services. What? Not bid? How do we know how much they will charge? This is extremely counter-intuitive for city councils and RWD boards that carefully watch each penny and who don't even roll over a CD without comparing interest rates from two or three local banks. It would be like asking Ford to explain how they build trucks and why they build good trucks, before asking how much a new truck costs. Nevertheless, before engineers quote a price, they are supposed to be selected based on their qualifications. Check out the National Society of Professional Engineers web site (www.nspe.org) for a good explanation of the process as well as the engineering code of ethics. (Yes, engineers have a code of ethics, just like lawyers, and conflict of interest issues, confidentiality and public duty are all concepts that engineers are supposed to address.)

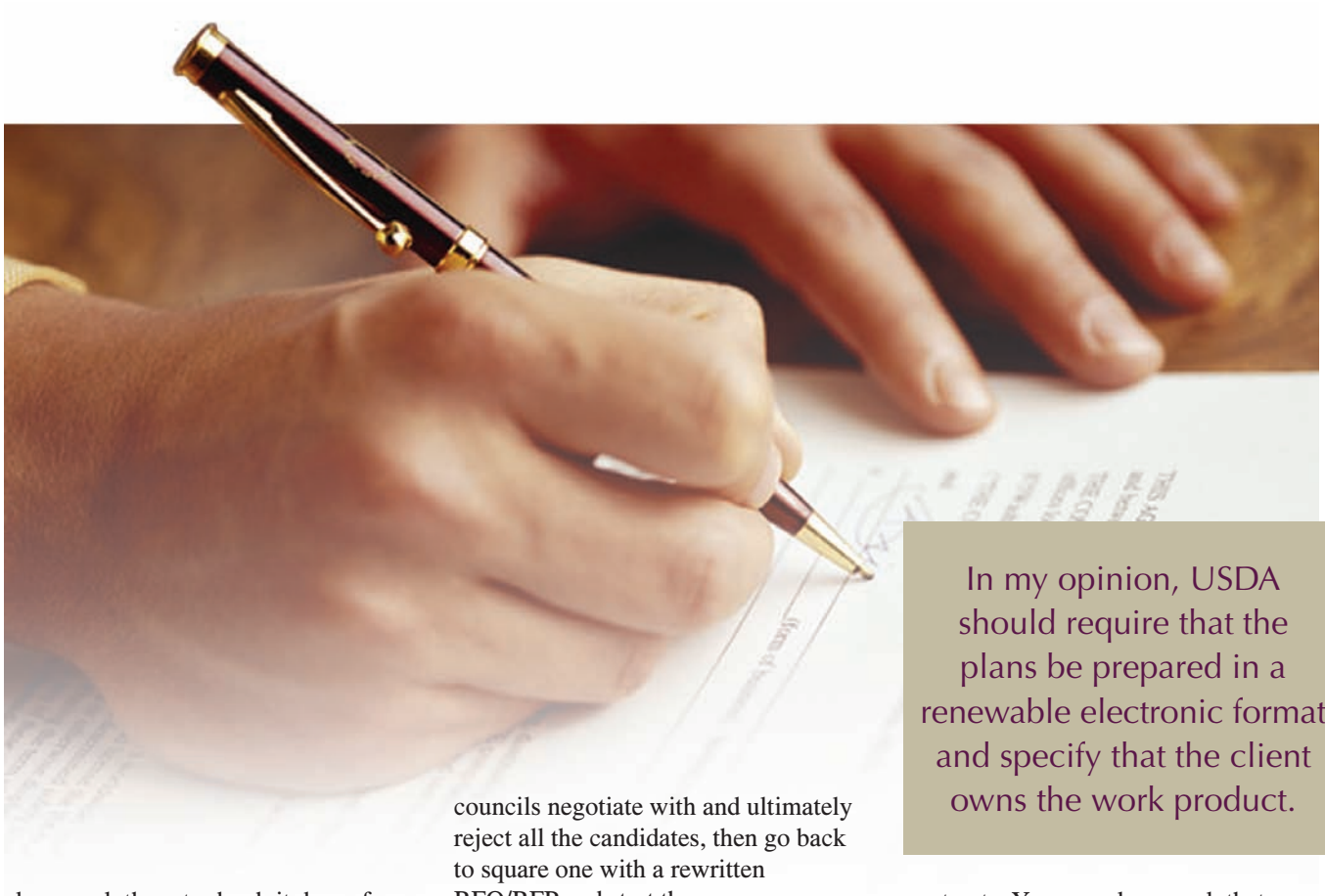
The RFQ is the beginning of this process. It gives information about the project to the engineers. The RFQ should describe the project as thoroughly as possible. It should detail the work to be done and the result to be achieved, so that the engineers can decide if they have the expertise to do the project. It should also ask for information from the engineers, such as a company profile, experience on similar projects, and references, but not ask for a price quote. The RFQ is generally published in a newspaper, mailed out to firms within a certain radius, posted, etc. The Internet makes it very easy to get an RFQ widely distributed. In fact, more and more towns and districts are asking for replies to the RFQ via email. The RFQ should contain a deadline, which the client needs to honor, much like a bid opening. Once the responses are received, a short list of engineering firms who appear to have the best qualifications is created. (Still, there's no idea what the engineer will charge!) Most city councils and RWD boards are comfortable with a short list of between three and five but let's face it, in rural areas, it may be lucky to get that many firms to respond at all.

The second step is to request an actual proposal from the short-listed firms. The client asks them to outline how they would do the actual work on the project – what personnel they would commit, how they would approach it, what sequence of events they see happening, etc. Now smaller towns and districts often decide to combine the RFQ and the RFP, especially for less complex projects. As long as all the sections are broken out and the responses clearly address both components, this can be a good idea.

The third step is to interview the firms selected. This should be done one at a time without the competing firms in the room! Ask lots of questions. The engineer can also make a presentation.

Smaller towns and districts often decide to combine the RFQ and the RFP, especially for less complex projects. As long as all the sections are broken out and the responses clearly address both components, this can be a good idea.

Presentations are nice, if you like death by Power Point, but do not let the engineer take control of the interview. This is common problem with both engineers and lawyers. Ordinary people do not always understand what we (speaking as an attorney who represents municipalities) do and we are often treated with too much deference because of that. We are used to standing up in front of people and lecturing them about things they do not understand; we sometimes forget that the client is the boss. Do not be afraid to ask the engineer to explain things in simple terms. I know that I do not know as much as an engineer, so I



In my opinion, USDA should require that the plans be prepared in a renewable electronic format and specify that the client owns the work product.

always ask them to dumb it down for me! If an engineer cannot explain their project proposal in simple enough terms for an ordinary person to understand, then there will be nothing but problems in the future.

Once the engineer is chosen based on the interview, the hard part starts. The next step is talking money and negotiating a contract. The problem is that even boards/councils that have worked their way through the RFQ/RFP process do not always succeed in negotiating a good contract. Part of the problem is that they don't negotiate. Once they reach this stage, they simply have the engineer prepare a contract which contains price provisions and they often accept whatever the engineer hands them. Somehow the boards/councils have the idea that once the engineer is selected, they have to abide by his/her pricing structure. This is not the case! If the client cannot negotiate a price it likes, then the client is free to decline to enter into a contract and go back to one of the other finalists and negotiate with them. I have even seen boards/councils negotiate with and ultimately reject all the candidates, then go back to square one with a rewritten RFQ/RFP and start the process over. This is a good thing! Be a smart consumer!

The type of funding used may also impact this entire process. If the town/district is using its own money for a project, then it may only have to follow state law requirements (if any) on RFQ/RFP's and engineering contracts. If the town/district is using USDA/RD, Community Development Block Grant (CDBG), or State Revolving Fund (SRF) loans or grants, then each agency will have very detailed procedures that must be followed for RFQ/RFP's and engineering contracts. This can be good because the agencies assume that smaller entities do not have the expertise in this area, so their procedures outline all the necessary steps and don't leave much to the imagination. The downside is that many of the forms which are provided are out of date and the sample engineering contracts themselves often contain antiquated language that even the engineers don't understand. So be careful when using these types of contracts. You can always ask that certain terms be changed. This is where it helps to have a lawyer handy!

For example, USDA engineering contracts do not address the ownership of the actual plans and drawings. In my opinion, USDA should require that the plans be prepared in a renewable electronic format and specify that the client owns the work product. This is especially relevant, because USDA no longer requires engineers to produce as-built plans, so it is even more important that electronic copies of the plans end up in your hands. This is critical for mapping projects as well as construction projects. I make this a mandatory issue in every engineering contract that I negotiate. In addition, as a matter of policy, construction inspection services should not automatically be included in the contract. Often the engineer is NOT the best or the most cost effective party to inspect construction. This often-ignored provision can cost the client many thousands of dollars. So you may want to delete or add contract provisions to these form contracts.

Nearly every engineering contract should have basic elements that must be addressed. The contract should basically answer the following questions:

- Who is the client?
- What is the scope of the project – what is all the work that needs to be done?
- When will the work be done and in what order – what is the project schedule?
- How much will the engineer be paid?
- When will the engineer be paid?
- What is the actual work product – maps, plans, specifications, permit applications?
- Who owns the work product – the engineer or the client or both?
- What additional services will be provided and how/when will the engineer be paid for them?
- How can the contract be terminated and who gets to terminate it?

There are other items that all contracts include such as choice of venue for lawsuits, damages, etc., but this article focuses on the issues unique to engineering contracts. The remainder will be saved for a legal seminar.

Identifying the client

This seems simple, but of course if an attorney is explaining it, it won't be! Who is the client? Does the client have the authority to request the engineer's services and will the client be legally responsible for paying the engineer? For example, a utility sub-committee of a city council may be allowed to negotiate the contract, but the actual city council has to be the one to sign it. Another problem is with new rural water/wastewater districts or unincorporated villages. Usually a group of concerned citizens will gather together to form a district and they may start the process of hiring an engineer before they are even legally formed. The legal formation may take place long after the contract is signed with an engineer. (Although I usually shudder when this happens because this means they have had little if any guidance in selecting an engineer.) This is incredibly common. In fact, the USDA/RD engineering services contract even has a special attachment that says the contract will still be binding even after the volunteer citizens group is replaced by the official governing body.

If the engineer does the preliminary work but the project doesn't receive funding, will he/she get paid for that work or is that just the engineer's risk? Ideally, the RFQ/RFP will cover some of these issues

Project scope

The contract needs to spell out exactly what work is going to be performed by the engineer and it should be in simple, clear language so that you can understand. It is the engineer's job to clarify all parts of the contract, especially if the client is not experienced enough to toss around terms like "deliverables" and "work product." Is the engineer just preparing drawings? Is he/she drafting plans and specifications? Is the engineer responsible for filing out loan/grant applications? How about drafting a feasibility study, preliminary engineering report, final engineering report – or preparing and submitting regulatory permit applications, surveying and obtaining easements? How many changes to the project will be allowed before the cost of services increases? Will the engineer perform construction inspection? Is the project contingent on obtaining state/federal funding? If the engineer does the preliminary work but the project doesn't receive funding, will he/she get paid for that work or is that just the engineer's risk? Ideally, the RFQ/RFP will cover some of these issues, but the client and the engineer should sit down and discuss these matters before the engineer just hands over a contract. Is the client going to request written monthly

project reports in simple language? A smart engineer will educate the client about the construction process and want to provide progress reports. If the city/RWD knows what is supposed happen and when it actually does happen, everyone will be much happier with the engineer's work and will understand why the engineer charges the rates he/she does.

Project schedule

The contract should have an outline of the actual work to be performed and clearly define the order in which the items need to be performed as well as some estimated dates if possible. These tasks to be performed are commonly referred to by engineers as "deliverables". The whole project is really sort of one huge deliverable, but it is made up of numerous individual steps that are deliverables as well. Generally, on a state/federal funded project, a very rough outline of some of the tasks the engineer may provide might be as follows: a feasibility study – an initial assessment of the economic alternatives to help the client choose the best solution and apply for funding; funding applications – may include feasibility study and other forms; preliminary design; final design and specifications; easement preparation and acquisition; permit applications to regulatory agencies; response to funding and regulatory agency comments; bid preparation; opening and tallying bids; pre-construction conference; construction staking; construction inspection; system testing; authorization of payments to contractors including final cleanup and final approval by the regulatory agency and final payments to contractors.

Again, a good engineer should be ready, willing and able to explain to you how he will handle all these steps and what they mean. A project schedule should also include a timeline or what is sometimes called "Gant Chart". Another option is a critical path chart that spells out the sequence of events that need to occur in order for the project to be finished as quickly as possible. State and federal funding agencies are sometimes helpful in listing the critical path, but often they focus on the critical path for funding, and there should also be a critical path for the actual construction. These timelines or critical paths are also helpful because they can and should also spell out what the client is responsible for and when that item must be completed. For example, if the engineer is responsible for preparing easements, but he has to wait for you to give him a list of the names and addresses of all the landowners who need to sign easements, then the schedule should spell that out.

Cost

The client needs to understand what the engineer is going to charge for and how he is going to charge for it. Engineers have a number of ways in which they charge for the work they do, and this is one of the concepts that may be new to systems. Engineers can charge based on five different formulas: cost plus, time and materials, lump sum, a "not to exceed" a set price, or a percentage of the construction cost. Cost plus is basically time and materials with an additional percentage added to it. Time and materials is the cost of any materials and the hourly rates of the engineers and his/her employees. Lump sum is just a fixed price. A "not to exceed" is like a top end estimate the engineer sets. He may charge less but he can't charge more than the upper limit. The percentage of construction cost is the method commonly used by state/federal funding agencies, so this is set out in advance and determined on charts. Not only are these five different formulas a bit confusing, but normally, a contract will have a combination of payment options. The main body of the construction may be based on a percentage of construction costs, but a special attachment may state that any additional work requested by the client, or construction inspections or easement work may be charged on a time and materials

Engineers can charge based on five different formulas: cost plus, time and materials, lump sum, a "not to exceed" a set price, or a percentage of the construction cost.

basis. You must know what these terms mean and be able to understand how the engineer proposes to charge you. Back during the RFP interview phase, the client city/RWD should ask for specific numbers on similar projects. Many engineers may be reluctant to provide that information, but if they worked for a public entity, the information is public record. The entity itself might help out with information. It is always interesting to see how much a project actually did cost compared to what the engineer said he would charge to do it. Did the engineer exceed a "not to exceed" because of problems with the construction? Did he/she charge a percentage of construction cost but add a large sum for work outside the scope of the contract at the request of the client? Do your homework!!!

The next question is when will the engineer be paid? The standard USDA/RD project specifies that the engineer is paid 70% when the project goes out to bid, another 10% upon completion of construction and the final 10% about 11 months after construction is completed. Maybe the client wants the engineer to do some work for free, on the hope that the project gets state/federal funding and moves ahead. Engineers are not supposed to work on contingencies like this, but many do and frankly that can benefit the project. If the project doesn't get funded, then the city/RWD doesn't owe the engineer any money. It is always a good idea to keep some funds on reserve until the engineer has completed certain phases of the project, no matter which payment formula will be used.

Work product and who owns it

Depending on the type of project, engineers do work that is both tangible and intangible. Intangible work products consist of things like advising the client, researching products and talking to manufacturers, negotiating with regulatory agencies, responding to regulatory comments, attending public meetings, setting construction stakes and interfacing with the contractors. Tangible work product consists of things like preparation of plans and specifications, easements, reports, and permit applications. It used to be that one way to tell the two apart was to think of tangible items as anything on paper. But what about email? Electronic files? Are those tangible or intangible? Who cares? Well the reason the client should care is because the contract should specify who owns the work product. Do not assume that the client owns the tangible work products just because the city/RWD paid for them. It is now accepted practice for an engineer to use software to design and draw out the plans and specifications or system maps. The project owner may receive a copy of those plans and maps but not receive the electronic file unless that is negotiated in advance.

This is a hotly contested area between engineers and clients. Engineers like to keep the usable electronic copies of plans, specifications and maps because they don't want other engineers piggy-backing off of their work and they probably hope to get the city/RWD to use them on future projects. Engineers will suggest that they cannot give you the electronic files because their engineering seal is on them and to give the original plans out would expose the engineer to liability. They will say that they can only submit the plans to the regulatory agency but no one else can have an electronic copy. Well that is nonsense. It's totally untrue! All the engineer has to do is to remove his seal and the plans can't be submitted for review, but you can still incorporate them into other plans. If another engineer is hired to extend a water/sewer system and pick up where the first engineer left off, he/she is supposed to identify any parts of any plans he/she didn't design anyway. This becomes a problem in system mapping, where small systems hire an engineer to map their system, but they never think to ask for the electronic files so that they can update the map in the future. So the client and the engineer need to agree in the contract that both sides will own the work product and that the engineer will provide transportable, translatable, useable electronic versions of the work products in a format agreed upon by the parties. If you remember nothing else from this article, remember this.

Additional services and change orders

Change is inevitable and nowhere is this more true than in construction. During the course of the project, the city/RWD may decide to request additional services such as additional water main extension or wastewater connections. The contract needs to spell out how the engineer will be paid for those additional services and whether or not they can be treated as change orders or if the scope of the project is changed and the engineer will have to re-draw plans or resubmit plans to a regulatory agency. The client needs to understand that these add-on requests will cost more money. The contract also needs to spell out when the engineer will be paid for this work. Will it be at the same time as the other payments, or at the time the work is performed? Some project change orders are inevitable and are necessary to make the project successful. The project owner needs to understand this and balance unnecessary change to the scope of the project with the flexibility to get the project completed.

Terminating the contract

Typically a contract for engineering services can be terminated in writing within a certain number of days by either party with payment for services due up to the date of termination. The client should definitely make sure that the contract spells out what payment is due and for what. If the contract is terminated and the plans and specs are not finished, then the engineer should receive considerably less money than if the project has already been let out for bid with the plans and specs completed. The key for a termination is to agree that city/RWD receives the same types of electronic files and all work products as discussed above in whatever state of completion they exist. Many engineers have been fired from projects and then refused to provide the client the electronic files even after they were paid. In some cases I'm familiar with, the client was given files that could not be used. If the relationship has soured, do not assume that the engineer will release the files even if the client pays. Make payment contingent upon receipt and examination of the files by another engineer.

This is a down and dirty summary of what goes into negotiating and drafting an engineering contract. Hiring an engineer and negotiating a favorable and clear contract may be the most important thing a city or RWD does – besides hiring a good attorney of course! The world of engineers and engineering contracts is complex. Unfortunately looking to state/federal funding agencies for their sample contracts is not always helpful. Do not assume that a city or RWD can turn their project over to the engineer and let him/her handle it. The client needs to become knowledgeable about the project. Ask lots of questions! If an engineer will not take the time to answer the questions before being hired, and then work openly to negotiate a fair contract, then it is doubtful that the client will get any answers once the project has started. Cities and RWDs need to be informed consumers – and take nothing for granted.

Elizabeth M. Dietzmann is an attorney formerly from Missouri, with a practice devoted to utilities, real estate and environmental law. She works extensively with rural water and wastewater systems on all aspects of formation, governance and regulatory compliance. Currently she resides in Virginia Beach, Virginia, and can be reached at edietzman@earthlink.net.