



# How to hire an engineer

*A guide for small public water systems*

Public water systems often need the services of a professional engineer when pursuing a new or updated planning document, or constructing new or replacement facilities. Large privately owned systems and city or water district systems frequently have an engineer on staff or under contract. Smaller water systems generally hire engineers as the need arises.

We designed this guide to help small water systems with limited experience hiring engineers. It will help you choose questions to ask and criteria to use when selecting an engineer. It may be particularly helpful for systems that must follow a specific process to qualify for grants or loan reimbursement.

## When do water systems need to hire engineers?

State Board of Health rules describe when a water system must use the services of an engineer. With certain limited exceptions, an engineer must participate in preparing a water system plan, and in the design and construction inspection of a pipeline, reservoir, supply source, treatment system, booster pump station, or control system.

When you submit engineering design documents to the Office of Drinking Water, be sure to give us enough time to complete the review and send you an approval letter before construction begins. If the submittal needs corrections or additions, you must respond to our comment letter before we can issue an approval letter. Your regional office can tell you the anticipated review time for your submittal (see regional office contacts on page 4).



## We expect consulting engineers to help water systems with the following planning, design, and construction services:

- Preparing the engineering elements of a Water System Plan, plan amendment, or plan update. We invite water system representatives and their engineer to a preplan conference, intended to identify the appropriate scope and level of detail expected in the planning document. Together, the engineer and the water system determine which planning elements the engineer should complete, and which the water system can complete. As they assign these responsibilities, we expect both parties to remember that a licensed professional engineer must perform any work involving the *practice of engineer* (defined by the state licensing board).
- Identifying source, storage, treatment, or water distribution system problems.
- Analyzing alternate solutions to these problems.



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- Preparing facility designs that will function properly, and operate safely, reliably, and efficiently.
- Preparing complete construction project cost estimates and project schedules.
- Preparing detailed construction documents to implement the selected alternative.
- Helping the system get plan approval from the Office of Drinking Water.
- Helping the system solicit and evaluate bids from contractors to perform the work.
- Inspecting and testing the quality of a contractor's work and making necessary reports and recommendations to the water system.
- Completing a *Construction Completion Report Form* to document that construction was completed according to our approved construction documents.

### What kind of engineer does my system need?

There are many categories of engineering specialties. Water systems often employ civil and environmental engineers, but these they are by no means the only ones that might be appropriate.

The engineer you select must be a professional engineer (PE) licensed by Washington State who has experience with public water systems. It is not legal for engineers or land surveyors to undertake assignments they are not qualified to do ([196-27 WAC](#)).

### What is a professional engineer?

A professional engineer is a person who has a specialized college education and engineering experience, passed our state exams, and is currently licensed by Washington State.

### Why must a water system hire a professional engineer?

- There are numerous technical details involved in planning, designing, and constructing water system components. Some details, such as structural requirements, soil conditions, corrosion, performance standards, sizing criteria, construction and operating costs, treatment process interactions, and safety, health, and environmental standards require the expertise, knowledge, and experience of a trained professional engineer.
- State rules require a PE licensed in the state of Washington to prepare certain documents related to public water systems ([WAC 246-290-040](#)). They include water system plans and project reports; and construction documents related to new public water systems, new or modified sources, new or modified water treatment processes (including chlorination), and extensions and alterations (except maintenance or replacements or other minor projects not requiring engineering expertise).
- State rules also require systems to submit a certificate signed by a PE to us within 60 days following completion of and prior to use of any project we approve ([WAC 246-290-040](#)). The certificate states that 1) the PE inspected the project and 2) it was constructed according to the approved construction documents.

### How can a water system find an engineer with water system expertise?

Other than reviewing the Yellow Pages, you can find engineers who may be interested in and capable of providing needed services by:

- Asking other water systems which engineers provided them with excellent service.
- Getting a list of engineers from our regional office. While we can't recommend an engineer, the list shows those who made submittals to us in the past.

## What criteria should we consider when selecting an engineer?

The primary considerations in selecting an engineer are **relevant experience** in the types of services needed and **demonstrated ability to serve in a timely and effective manner**. The basic criteria to use in the selection process include:

- **Knowledge:** The engineer should have specialized education or training in the aspect of public water system planning or engineering that the small water system needs.
- **Experience:** The engineer should have professional engineering experience with similar water system projects for a similar size system.
- **Ability to Serve:** The engineer should demonstrate that sufficient uncommitted time and other resources are available to perform the services within the time needed by the water system.
- **Communication:** The engineer should demonstrate the ability to communicate in a thorough and timely manner as needed to keep the water system fully and satisfactorily informed.
- **References:** The engineer should provide three or more references from previous clients where similar water system engineering services were performed. In addition to a contact person, the engineer should provide information on the type of project, year the project was undertaken, total actual versus estimated cost of the project, and the name of the engineer in charge of the project.

If you hire an engineering firm, these criteria should apply not only to the firm, but also to the specific engineer or engineers who will do the actual work. Many large engineering firms have people who meet all these criteria, but they don't actually work on all of their clients' projects.

## What procedures should we use to select an engineer?

- Contact at least three engineers to briefly discuss the needed engineering work and ask them if they are interested. If a grant or loan is involved, a more formal process may be required. Check with the funding agency.
- Interview three or more engineers who express interest in the job. Use the selection criteria outlined above.
- Contact their references and ask how the engineer performed the assignment. If possible, visit the references' water systems and their completed projects.
- Rank the engineers in order of preference.
- Ask the first-ranked engineer to submit a written proposal. The proposal should include details such as what work will be accomplished, how the work will be done, how much time it will take, what fees will be charged, and the acceptable payment method.
- Meet with the engineer, if necessary, to discuss any items not fully addressed in the proposal.
- If the proposal is acceptable, proceed to the contract stage. The engineer usually provides the contract, including a mutually acceptable scope of work. You may be able to get sample contracts from other water systems. Have your water system's attorney review the contract.
- If the terms and conditions of a contract are mutually acceptable, notify the other engineers you interviewed about your selection.
- If you can't mutually agree on the contract terms, end negotiations and begin to negotiate with the second-ranked engineer.
- If a grant or loan is involved, have the funding agency review the contract before you sign it.

## What services should the engineer perform?

There is no standard package of engineer services. Engineers tailor their services to the specific needs of each small water system. Generally, engineers are involved in three phases of a design and construction project:

- 1. Planning and Preliminary Design Phase:** Involves studying the problem, determining alternate solutions, outlining the basic concept, making preliminary cost estimates, and establishing project feasibility. Water systems should not go into a project with a preconceived idea of what they need. They should expect the engineer to perform an analysis of alternatives not simply give a “seal of approval.”
- 2. Final Design Phase:** Includes design, fieldwork, preparing construction documents and cost estimates, and submitting to and obtaining approval from all required agencies (not just the Office of Drinking Water). The engineer may help you prepare a grant or loan application for your construction project. If you will use a grant or loan to help pay for the project, the funding agency may require the engineer to include additional items in the bidding documents. The engineer should be familiar with all agency-specific funding requirements.
- 3. Construction Phase:** May involve construction staking, managing the selection of a contractor, surveillance and inspection of the contractor’s work during construction, approval of shop drawings, reviewing field test results and the contractor’s progress payment requests, and other matters required to administer the construction contract. This phase often includes preparing as-built drawings and completing the *Construction Completion Report Form*.

## How do we determine the costs of engineering services?

You may base engineering fees on a set fee per day, cost times a factor, lump sum, or a percent of project cost. Whatever financial arrangements you make, before signing a contract you and the engineer should fully agree on the specific services to be performed and how they will be reimbursed. It is common practice to withhold a percent of the fee to make a final payment to the engineer after we approve the project. Details to work out with your engineer include:

- Will travel time be an additional charge? If so, at what rate?
- Will the fee include all consultations? Or, will there be an additional charge for each meeting above a set number?
- How will the engineer charge the water system if we require changes or additions to the engineer’s submittal?
- Will a particular pay option provide incentives for the engineer to save money for the water system?

## For more information:

Call your ODW regional office.

**Eastern Region:** Spokane (509) 329-2100

**Northwest Region:** Kent (253) 395-6750

**Southwest Region:** Tumwater (360) 236-3030



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