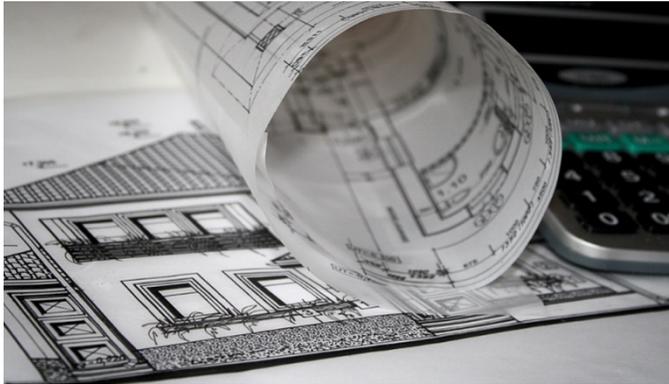


How to Hire a Professional Engineer

A guide for those who must submit wastewater treatment systems engineering documents to the Washington State Department of Health, Wastewater Management Section

August 2017



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How to Hire a Professional Engineer

We want to help you through the process of hiring and working with your engineer.

If you are planning to build a large on-site sewage system (LOSS) that must be approved by Washington State Department of Health (DOH), you must have the help of a Professional Engineer. The Professional Engineer (PE) must design and review the construction of LOSS with peak day flow from 3,500 to 100,000 gallons per day. When you need repairs or improvements or want to expand your LOSS, the PE also prepares the state-required submittals. The engineer must be qualified to perform the services needed by the system.

How this document will help you.

This guide will help you to decide what questions to ask and what criteria to use in choosing an engineer or engineering firm for your project. This is very important if you must follow a specific process to be eligible for grants or loan reimbursement, or if state law requires a public hiring process.

For systems with design flows below 3500 gallons per day (gpd), state-licensed On-Site Designers can be hired instead of a PE. Some of the information in this document will help you when hiring a licensed On-site Designer. Note that Designers submit their projects to the local health jurisdiction, not to DOH.

Acronyms used in this document

“DOH” means Washington State Department of Health

“LOSS” means a large on-site sewage system

“PE” means professional engineer

“gpd” means gallons per day

What is a Professional Engineer (PE)?

A PE is a person who has had specialized college education and engineering experience and has passed the written licensing exam. The PE must be licensed by the state of Washington. He or she will have a license number, which you can find on Department of Licensing's website (www.dol.wa.gov/business/professionals.html) to verify that the license is valid and current. The license number is included on the PE's stamp that must appear on your documents.

Why must a system or project owner hire a Professional Engineer?

There are many technical details involved in designing and installing wastewater treatment systems. Some of the system components such as treatment processes, collection or distribution piping, and soil conditions require the expertise, knowledge, and experience of a trained professional engineer. A licensed hydrogeologist or certified soil scientist may need to evaluate your site and soil conditions, especially for large on-site sewage systems (LOSS) planned for sensitive sites.

State LOSS regulations ([Chapter 246-272B WAC](#)) require that certain documents be prepared by a PE licensed in the state of Washington. Your predesign and project reports, design and construction documents, and any wastewater planning documents must be prepared by a PE.

For all projects, project improvements, and major repairs, your PE must stamp, sign, date, and submit to DOH a construction report, final operations and maintenance manual, final management plan, and record drawings of the LOSS within 60 days the system's construction or repair, replacement or expansion. DOH must approve these documents before you can use your LOSS.

What can an engineer do for your project?

A PE with appropriate expertise can perform the following services for the required planning, design, and construction of large on-site sewage systems:

- Design a system that functions properly to protect public health and the environment and is efficient and economical.
- Identify collection, treatment, and/or distribution system problems and needs.
- Analyze alternate solutions.
- Prepare detailed construction and bid documents for the selected design.
- Help you receive plan and design approval before construction from DOH. Submittals to DOH must be prepared and stamped by a PE licensed in Washington State.
- Help you solicit and evaluate bids from contractors to perform the work.

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- Inspect, test, and evaluate the quality of a contractor's work to assure the LOSS is installed according to the approved design.
- Develop necessary reports and provide recommendations to you, the owner, and/or operator of the system.
- Complete DOH-required construction documents. Your engineer or designated representative should be on site to supervise and inspect the work as it is progressing and have direct knowledge of the system's construction. Your engineer must stamp and sign the DOH Construction Report form and record drawings ("as-builts") and send them to DOH for review and final approval. Operation and maintenance manuals for LOSS must also be stamped, signed and sent to DOH for approval.

What kind of engineer is needed?

There are many categories of engineering specialties. Civil engineers and environmental engineers are commonly employed to design and build wastewater treatment systems. The engineer you select must be a Professional Engineer (PE) licensed by the state of Washington and should have experience with the type of wastewater treatment system you own or plan to build, repair, or modify. Experience with soils is also a plus when designing large on-site sewage systems. In some cases your PE will consult with a licensed hydrogeologist or certified soil scientist. It is not legal for engineers or land surveyors to perform work for which they are not qualified.

How do you find a PE with the right expertise for your project?

There are several ways of finding PEs who may be interested in and capable of providing the services you need.

- Consult the yellow pages of telephone books for larger towns and cities. Listed under "Engineers" will be various categories of engineering specialties. You may also search the internet.
- Contact others who own similar systems, or who have constructed similar projects, to learn which engineers have provided them with satisfactory service.
- DOH may share the names of PEs who have submitted work to us, but we cannot make recommendations.
- If your PE does not have all the necessary knowledge, he or she may work with or subcontract portions of your project work to other professionals.

What services should the engineer perform?

There is no standard package of services that engineers must or can perform. The services are tailored to your specific needs. There are generally three phases of a design and construction project that the PE is involved in: planning and preliminary design, final design, and construction. You may choose to contract with the PE for all phases, or contract the phases as the project proceeds.

- **Planning and Preliminary Design Phase** - Involves studying the proposed site and necessary treatment, determining alternate solutions, outlining the basic concept, making preliminary cost estimates, and ensuring project feasibility. You shouldn't go into a project with a preconceived idea of what is needed. Don't expect your PE to just give a "seal of approval." The PE should actually perform an analysis of alternatives.
- **Final Design Phase** - Includes field work, design, preparation of construction documents and project cost estimate, and submitting documents to and obtaining approval from all required agencies, not just DOH. The design and construction documents must be approved by DOH. You must then submit an operating permit application and we must issue the permit. In some cases, public notice must be given at this stage. When these steps are complete, we will give approval to construct.

If a grant or loan is helping to pay for your project, your PE may help prepare the grant or loan applications. Additional requirements may need to be included in the bidding documents the PE prepares. Your PE should be familiar with the requirements, or can consult with the funding agency.

- **Construction Phase** - Involves hiring a contractor, inspecting, testing, evaluating and documenting the contractor's work, reviewing any contract change requests and contractor's progress payment requests, and other tasks necessary during construction. In addition, the PE must prepare record drawings (very important!), sign, date, and stamp the DOH Construction Report form, and complete the operation and maintenance manual specific to your LOSS. The drawings, report form and manual must be submitted to DOH in order to receive final approval.

What criteria should you consider in selecting an engineer?

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

- **Key Personnel** - The PE(s) who will work on the project should be identified. Many large engineering firms have several people that meet the experience criteria but may not actually have a role in the project. The individual(s) assigned to your project should meet your selection criteria.

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- **Knowledge** - The PE should have specialized education or training in the aspect of planning or engineering that you need.
- **Experience** - The PE should have experience with similar projects for a similar size system. You may also want to consider the PE's experience with regulatory and funding agencies.
- **Ability to Serve** - The PE should demonstrate that he or she has enough uncommitted time and other resources to perform the services within the time needed.
- **Communication** - The PE should demonstrate the ability to communicate in a thorough and timely manner as needed to keep you fully and satisfactorily informed.
- **References** - The PE should provide three or more references from previous clients for whom similar engineering services have been performed. You should ask the PE for the name of the project contact person or owner, information on the type of project, year the project was undertaken, total actual cost versus estimated cost of the project, and the name of the PE in charge of the project.

What procedures should you use to select an engineer?

- If you are a government entity, or if you are applying for state or federal funding, you may have a prescribed selection process to follow. Ask your attorney or the funding entity before you get started.
- Compile any readily available information about the site and what kind of development the LOSS will serve. Prepare a brief written description of the work you think needs to be done.
- Contact at least three engineers/firms to briefly discuss what engineering work is needed, and find out if they are interested.
- Interview three or more of the engineers/firms expressing an interest, based on the selection criteria noted above. Before the interview, give each a clear, detailed description of the project, all known background information and data, deadlines, and if necessary, an approximate budget. The better you can define your project, the more precise their proposal will be. Some selection processes may not allow you to request proposed costs from the engineer at this time.
- Contact their references and ask how well the engineers performed the assignment. If possible, visit the references' completed projects.
- Rank the engineers in order of preference.
- Ask the first-ranked engineer/firm to submit a written proposal. The proposal should include:
 - A scope of work with details such as what work will be done and how the work will be accomplished,
 - Resumes of key personnel and their roles,

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- Estimated work schedule,
- Anticipated costs and related fees, such as DOH review charges,
- Itemized engineer's fee schedule (see section below),
- Estimated total project cost, including subcontracts with other professionals,
- Accepted payment methods, and
- Whether redesign and response to DOH comments on the submittals are included in the proposal.
- Meet with the engineer, if necessary, to discuss any items not fully addressed in the proposal or any modifications.

When do I sign the contract?

- If the proposal is acceptable, proceed to the contract stage. If you don't have a standard contract, the engineer may provide one. It should include items noted above from the proposal and a process for dispute resolution. You can ask other utility systems for example contracts. Be sure to ask your attorney to thoroughly review the contract.
- If a grant or loan is involved, ask the funding agency to review the contract before you sign it. If you are getting a bank loan, the bank will also want to see the contract.
- Before you sign a contract, you and the PE should agree on the specifics of services to be performed and how they are to be charged and reimbursed. The following details often need to be worked out:
 - Will travel time be an additional charge and, if so, at what rate?
 - Will the fee include all consultations, or will each meeting with you or DOH above a set number be an additional charge?
 - If there are subcontracts with other professionals, how will those charges be handled?
 - How will you be charged for any changes to the project? What if you, DOH, or another agency requires changes or additions to the engineer's design submittal? Or if changes during construction result in a significant change in construction management?
 - Who will pay permit and review fees? Will you pay fees directly to DOH or other agencies?
 - Will a particular pay option provide incentives for the PE to save money for you?
 - Will the PE's payments be delayed by the loan or grant reimbursement process?
- When the terms and conditions of a contract are mutually acceptable and the contract is signed, let the other engineers you interviewed know of your selection.



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- If contract terms can't be mutually agreed on, end negotiations with that engineer and start the process with the second-ranked engineer.

How are the costs of engineering services determined?

Several methods are used by engineers to charge for services. They include:

- Cost plus fixed fee,
- Cost times a factor,
- Cost times a factor with a “not to exceed” price,
- Fixed price, or
- Percentage of project cost.

If You Have Further Questions

For large on-site sewage systems in eastern Washington:

DOH Spokane LOSS Office
Wastewater Management Section
509-329-2100

For large on-site sewage systems in western Washington:

DOH Tumwater LOSS Office
Wastewater Management Section
360-236-3330

Information and Guidance can be found on our website: www.doh.wa.gov/LOSS

For information on licensing professional engineers, contact the Department of Licensing at 360-664-1575. You can check on license status for Professional Engineers and On-site Wastewater Treatment Designers at: www.dol.wa.gov/business/professionals.html.