

# DAM MAINTENANCE

## AND OWNER RESPONSIBILITY

Dam owners receive important benefits from the reservoir impounded by the dam. The responsibility owners hold for understanding the laws and regulations associated with proper dam maintenance, and the procedures for keeping these structures safe, is significant. This understanding could determine whether an owner will reap the benefits associated with responsible dam ownership or pay the costs resulting from improper dam maintenance. One of the most important procedures for ensuring proper maintenance of the dam is procuring the services of a professional engineer. This brochure is designed to answer the most commonly asked questions about hiring an engineer.

### WHY DO I NEED AN ENGINEER?

All dams meeting government regulatory definitions – no matter what their size or level of engineering – will deteriorate with time. Periodic inspection, proper maintenance and occasional repair and rehabilitation are inevitable. An owner needs the expertise of an engineer to perform inspections or evaluate and undertake corrective measures at a dam. An engineer can investigate the problem and recommend a course of action which may include the design of corrective measures and the preparation of construction plans and specifications. The engineer also can assist in selecting a contractor and will provide valuable construction inspection services.

### WHAT TYPE OF ENGINEER SHOULD I HIRE?

It is essential to select someone with a professional engineer (P.E.) certification, with a background in civil engineering and who is competent in the field of dam safety. Important criteria to look for in a prospective engineer include the following:

- A licensed professional engineer;
- A minimum of 10 years experience in dam design and construction;
- A knowledge of the rules and regulations governing dam design and construction in the state where the dam is located;
- Specific experience in the problem area-e.g., hydrology, hydraulics, structural or geotechnical engineering.

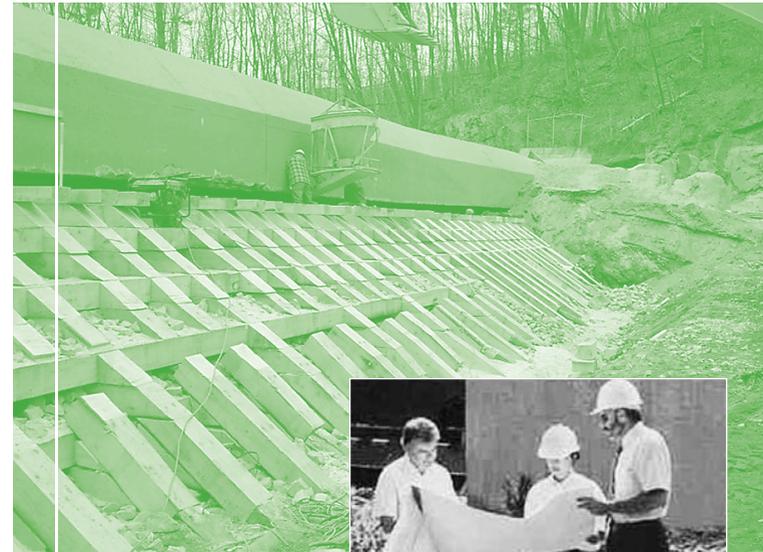


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## Procuring the Services of a Professional Engineer



## DAM OWNERSHIP



# INTRODUCTION

Dams are owned and operated by individuals, private and public organizations, and the government. The responsibility for maintaining a safe dam rests with the owner. A dam failure, resulting in an uncontrolled release of the reservoir, can have a devastating effect on persons and property downstream. Additionally, a dam failure could mean loss of a vital resource to you. As a dam owner, you are liable for the water stored behind your dam. Therefore, proper operation, maintenance, repair and rehabilitation of a dam are key elements in preventing a failure, limiting your liability and maintaining your water resource.

# SELECTION STRATEGIES

## HOW DO I CHOOSE AN ENGINEER WHO IS BEST FOR MY NEEDS?

There are three basic strategies for selecting engineering consulting services. These selection strategies are:

- Qualification-Based
- Fee-Based
- Intermediate

### QUALIFICATION-BASED

Qualification-Based selection means that the knowledge, experience and ingenuity of the engineer are the determining factors in making the selection. This strategy is advantageous when the owner is uncertain about the exact problem or the best solution to the problem.

When Qualification-Based selection is used, several engineering firms submit their technical qualifications, experience with similar projects, reputation with existing clients and any other factors pertaining to the specific project. The owner then selects the three most qualified firms to make brief presentations outlining a cost-effective and innovative approach to the problem. Based upon these presentations, the owner chooses the most qualified engineer to develop a scope of work.

When agreement on the scope of work is achieved, the engineer and the owner negotiate a price that is fair and reasonable to both parties. If an agreement cannot be reached, negotiations start with the second-ranked engineer. In this selection process, price is the main factor, but only after the most qualified engineer has been identified.



### FEE-BASED

Fee-Based selection means the engineer's fee is the only determining factor in making the selection. It is advantageous when the owner knows exactly what is needed and can clearly define the scope of work before meeting with an engineer. In this case, the engineer is requested to prepare the designs and bid documents or conduct investigations as the owner specifies. This usually means getting a job done using "cookbook" solutions-with little room for innovation.

A strict Fee-Based selection often means the engineer selected may not be qualified to do the work, especially if the bidding is open to anyone and/or the scope of work is poorly defined.

### INTERMEDIATE

The Intermediate option is a cross between the Qualification-Based selection and Fee-Based selection processes. The Intermediate option requires the owner to pre-qualify engineers that are asked to submit a Fee-Based proposal. This process ensures a higher certainty that the work will be superior quality, but requires the owner to clearly define the scope of work. Without a clearly defined scope of work, the owner could receive a wide range of fee proposals, depending on the consulting engineer's interpretation of the project.



# FOR YOUR CONSIDERATION

Request references from the engineer. Contact the references to discuss the engineer's performance. Look at projects that have been completed under the engineer's leadership. Request to review state files of projects an engineer has undertaken to see if the process went smoothly.

Maintain an open line of communication with regulatory agencies, particularly your State Dam Safety Program. Discuss an engineer's recommended course of action to verify that regulatory requirements will be satisfied.

Educate yourself in the basics of dam safety and be knowledgeable regarding the laws you must meet.

Carefully consider your selection of an engineer. A little work on your part in selecting the engineer may save you money in the future.

For information on state dam safety statutes and administrative rules, contact:

- State Dam Safety Office
- ASDSO
- State Attorney General

### REFERENCE MATERIALS

*Consulting Engineering: Guide for the Engagement of Engineering Services*, American Society of Civil Engineers Manual and Reports on Engineering Practice, No. 45, 1988

*Qualification-Based Selection*, American Consulting Engineer's Council, 1994

*Dam Safety: An Owner's Guidance Manual*, FEMA 145, August 1987

*Training Aids for Dam Safety: Dam Safety Awareness*, Interagency Committee on Dam Safety/U.S. Bureau of Reclamation, 1994

ASDSO's Web site – Tools and downloadable guidelines are available. [www.damsafety.org](http://www.damsafety.org)

