ASCE Manuals and Reports on Engineering Practice No. 103



Guide to Hiring and Retaining Great Civil Engineers



Sponsored by Committee on Professional Practice,
Constituent Committee on Employment of Civil Engineers

ASCE

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Edited by
Robert J. Russell, P.E., F. ASCE

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Abstract: In the past, many organizations viewed individuals as expendable. If employees didn't have the right skill mix, they were replaced. Fortunately, we've now come to realize that this approach no longer works; the supply of civil engineers is extremely limited and loyalty has value. Putting people on the street and then hiring replacements is not a good plan for the long haul. If you're asking people to accept and embrace constant change, then you need to establish a long-term commitment.

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(As developed by the ASCE Technical Procedures Committee, July 1930, and revised March 1935, February 1962, and April 1982)

A manual or report in this series consists of an orderly presentation of facts on a particular subject, supplemented by an analysis of limitations and applications of these facts. It contains information useful to the average engineer in his everyday work, rather than the findings that may be useful only occasionally or rarely. It is not in any sense a "standard," however; nor is it so elementary or so conclusive as to provide a "rule of thumb" for nonengineers.

Furthermore, material in this series, in distinction from a paper (which expresses only one person's observations or opinions), is the work of a committee or group selected to assemble and express information on a specific topic. As often as practicable, the committee is under the direction of one or more of the Technical Divisions and Councils, and the product evolved has been subjected to review by the Executive Committees of these Divisions or Councils. As a step in the process of this review, proposed manuscripts are often brought before the members of the Technical Divisions and Councils for comment, which may serve as the basis for improvement. When published, each work lists the names of the committees by which it was compiled and clearly indicates the several processes through which it has passed in review, in order that its merit may be definitely understood.

In February 1962 (and revised in April 1982) the Board of Direction voted to establish:

> A series entitled *Manuals and Reports on Engineering Practice,* to include the Manuals published and authorized to date, future Manuals of Professional Practice, and Reports on Engineering Practice. All such Manual or Report material of the Society would have been refereed in a manner approved by the Board Committee on Publications and would be bound, with applicable discussion, in books similar to past Manuals. Numbering would be consecutive and would be a continuation of present Manual numbers. In some cases of reports of joint committees, bypassing of Journal publications may be authorized.

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FOREWORD

HOW DO YOU FIND AND KEEP THE BEST CIVIL ENGINEERS?

The decades of the 1980s and 1990s were among the most turbulent in business history. Downsizing, mergers and acquisitions in the private sector, and tight budgets and reductions in workforce in the public sector, became constants. Radical advances in technology combined with the globalization of commerce have made change in the workplace a way of life. The resulting, ever-increasing pressure to work longer, smarter, faster, and harder has driven many civil engineers to not only question their commitment to an all-consuming career but also to search for meaning outside of the workplace.

THE GENERATION CHALLENGE

We as managers often must deal with a generation of employees with values quite different from our own. Just as we were getting used to Generation X, along comes Generation Y, composed of those born after 1977. What are they looking for from employers? Here's how Generation Y college students responded to one survey about what they want in their first jobs:

- a fun work environment
- growth opportunities
- competitive salary
- a wide range of projects to work on
- good benefits, including healthcare, profit sharing, and 401K
- opportunities to learn and develop new skills—all paid for by the company
- travel opportunities
- flexible work schedules

For these new workers, putting their career first while robustly pursuing the bottom line has been replaced by putting their family/personal life first while robustly pursuing a better quality of life. Today many civil

engineers worry about how their work affects their personal life rather than how their personal life affects their work. This change in the work ethic creates a significant challenge for us as civil engineering managers.

MEETING THE CHALLENGE

The need for civil engineers has outstripped supply, and it has become increasingly difficult for firms to retain civil engineers—particularly the best ones—and recruit additional civil engineers to meet staffing needs. In response, the American Society of Civil Engineers (ASCE) Committee on the Employment of Civil Engineers (CECE) decided it was time to publish a guide on finding and keeping the best civil engineers.

While this manual has been written primarily for middle managers—the staff level with prime responsibility for recruiting and retaining engineers—it is also of value for new hires and junior staff, and senior management. It was written by CECE members, who are civil engineers with many years' experience in both the public and private sectors. Additionally, several human resource practitioners were recruited to help. Thus, the manual represents the best of both worlds—the pragmatic focus of civil engineering practitioners as well as valuable contributions from specialists in the human resources field.

As the search for civil engineers has reached epic proportions, the committee believes this manual can help you to improve your organization's hiring practices and keep the good engineers you already have. ASCE continues to hear about the nationwide shortage of civil engineers and the resulting constraints imposed on engineering organizations' success and ability to grow. These include reports of failed strategic plans and abandoned expansion opportunities due to a shortage of civil engineers on staff.

In the past, many organizations viewed individuals as expendable. If employees didn't have the right skill mix, they were replaced. Fortunately, we've now come to realize that this approach no longer works; the supply of civil engineers is extremely limited and loyalty has value. Putting people on the street and then hiring replacements is not a good plan for the long haul. If you're asking people to accept and embrace constant change, then you need to establish a long-term commitment.

These issues are among the many this manual addresses in detail. Remember, "Eagles don't flock. You have to find them one at a time." Whether you need help finding them, recruiting them, or keeping them in the nest, this manual is for you. Read on.

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Chapter 1
INTRODUCTION

Attracting and retaining quality employees in the civil engineering workforce will be among the greatest challenges to our profession in the foreseeable future. According to the U.S. Bureau of Labor Statistics (BLS), the need for civil engineers is expected to increase 21% between 1998 and 2008 from about 195,000 to 236,000—a growth rate faster than the average for all occupations for the same period. However, supply is not keeping pace. The U.S. Department of Education reports that degrees earned in civil engineering in this country increased only from 9,989 in 1983 to 10,437 in 1997. Although this represents an increase of about 4%, it doesn't even come close to meeting the projected BLS need.

To fill the demand for postbaccalaureate engineers, organizations have been recruiting worldwide. The U.S. Immigration and Naturalization Service (INS) reports that an annual average of 9,685 engineers and surveyors immigrated to the United States between 1995 and 1998. However, the rate of immigration for engineers has been slowing since 1996.

According to the INS, engineers who immigrated to the United States during the last 4 years have come from the following regions (see Figure 1).

Asia	47%	*Indonesia, China, Philippines, Taiwan, Korea, Japan*
Europe	25%	*United Kingdom, Russia, Poland, Romania, Bulgaria*
North America	12%	*Canada, Mexico, Dominican Republic, Cuba, Jamaica*
Africa	10%	*Nigeria, Egypt, Ghana, South Africa, Ethiopia*
South America	5%	*Colombia, Peru, Brazil, Ecuador, Guyana*
Oceania	1%	*Australia, New Zealand, Fiji*