

# CE

# NEWS

FOR THE BUSINESS OF CIVIL ENGINEERING

## Where are you taking your firm?

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## A provider of affordable engineering services

I generally agree with the opinion publisher Terry Stringer expressed in "Affordable Engineering Services" (Comment, August 1998). But I am concerned by the implication that "affordable" cannot be of good "quality." Specifically, the closing statement, "There's no such thing as affordable engineering services," couldn't be further from the mark.

In fact, when total life-cycle costs are considered, the most "affordable" engineering may be the most expensive in terms of front-end engineering fees.

The key is to teach consumers of engineering services to consider total life-cycle costs rather than treat engineering as another "line item" in the overall budget. I very much agree that this is much easier said than done, but I think a good start is to refuse to buy into the idea that our services can't be affordable. In fact, I believe I deliver very good value to my clients, most of whom are repeat customers and award sole-source contracts to us. That's a good indication of affordability!

*Mark E. Smith, R.C.E., G.E.  
Founder  
Vector Engineering, Inc.  
Grass Valley, Calif.*

## Corrosion of reinforcing steel: time to go back to the basics

Carl Crumpton of the Kansas State Transportation Department once said, "The wedding of concrete and steel was an ideal union and we used lots of reinforced concrete for bridge decks. Unfortunately, we began tossing salt to melt snow and ice instead of rice for good fertility. That brought irritation, tensions, and erosion of previously good marital relations. No longer could the two exist in blissful union: the seeds of destruction had been planted and the stage had been set for today's bridge deck cracking and corrosion problems."

David C. Romano, P.E., and Richard J. Kessler, P.E. (Preventing corrosion in reinforced concrete steel structures, March '98), showed a classic example of the destructive power of this culprit in many concrete bridges in Florida in forms of rebar corrosion with cracking and spalling of concrete from bridge piles exposed to the saltwater splash zone.

Undoubtedly, corrosion of reinforcing steel is the major evil in today's construction world. Blame should go to us, not the concrete. Concrete itself has the ability to prevent corrosion by virtue of its inherent alkaline nature, as long as we make sure that:

1.) The concrete is very dense and impermeable—by using a low water/cement ratio mixture; incorporating fly ash, slag, or silica fume as cement replacement; and by adequately curing the concrete;

2.) The rebar is protected by a thick concrete cover to prevent penetration of aggressive corrosion agents (e.g., carbon dioxide, chloride, oxygen, moisture, sulfates) into concrete; and

3.) The concrete is not susceptible to developing any post-construction cracking from freezing-thawing, heating-cooling, wetting-drying, or loading-unloading stresses.

If we follow these three preliminary precautions, then we do not need to worry about corrosion. Neither do we need to scratch our heads to find a sophisticated and "expensive" preventive precaution like the use of corrosion inhibiting admixtures (e.g. calcium nitrite), epoxy-coated or galvanized steels, or cathodic protection. Many 50- to 60-year-old bridges in aggressive marine environments are still in good condition simply because they were made up of dense impermeable concrete with adequate cover over the steel.

Corrosion of steel is an ideal example which is repeatedly telling us to go back to the basics, and follow that KISS principle! I applaud Romano and Kessler for warning us again, and congratulate **CE News** for giving such a spectacular presentation of corrosion in the magazine! I hope their message does get into practice.

*Dipayan Jana  
Materials Scientist  
Materials Technologies  
Ossining, N.Y.*

## Acclaim for our columnists

I really enjoy the writings of Ron Kirby and Al Pagan. When I receive the magazine, those two columns are the first things I read. Being in the public sector I especially enjoy Kirby. And Pagan always has an insight into the profession that stirs my intellect and interest.

I hope they continue to write for this very fine magazine.

*Charles E. O'Brien, P.E.  
Somerville, Mass.*

Just a quick note to let you know how much I enjoy Al Pagan's column each month. I find it to always be loaded with practical advice and solid wisdom. As a 30-something engineer, his articles provide a type of mentoring I wish I had more of. God bless and keep up the good work!

*Douglas E. McClure  
South Carolina Dept. of Transportation*

## Comprehensive salary surveys

I saw David Wahby's Q&A in the **CE News** August 1998 issue. One of the questions he was asked about was historical salary information for consulting engineering firms.

The Engineering Workforce Commission, a non-profit organization, has been publishing the most comprehensive salary survey of the engineering community since 1949. We have 50 years of data on engineering salaries in over 30 disciplines for all the states in the U.S. Data is provided by years of experience, highest degree held (B.A., M.A., or Ph.D.), and by supervisory vs. non-supervisory status. The survey is conducted by surveying over 6,000 U.S. corporations who hire engineers. The Human Resources Department reports the salaries for their employees. The survey is considered to be more accurate than most because we do not ask individuals to self-survey their salaries.

The data is collected annually and is available in three different methods; the full survey can be purchased covering all industries and geographic regions, and an abridged version can be purchased that does not include degree breakouts. The third option is a product called a "Personal Salary Profile," where an individual can give us their personal information about years of experience, geographic region, supervisory status, industry, and degree and we provide the data that applies only to them.

*Amy R. Goldman  
Manager  
Engineering Workforce Commission  
American Association of Engineering Societies  
Washington, DC*

## A question for engineers

I am puzzled. Over the past two centuries, civil engineers have created fabulous technologies and public works to provide clean water and treat wastewater. This work was done to eradicate vector-borne diseases and to enhance and protect public health, welfare, and safety.