



## *The year of the contractor*

**I**t has been a few years since a contractor has been honored by being elected President of the American Concrete Institute. The coincidence of this happening at the time of our joint convention activities with the World of Concrete provides some impetus to one of our goals — encouraging contractors to join ACI. Some contractors were most notably present during the recent convention in Las Vegas.

Through recent actions taken by the Board of Direction and the Technical Activities Committee, ACI established the Construction Liaison Committee and the Construction Review Committee. These are contractor-member committees. The CLC was created to advise the Board with regard to contractor needs. The CRC acts through the TAC and was created to provide response from the contractor practitioner to others in the Institute who are writing specifications, codes, and standard practices.

It is apparent there has been a substantial gap in communication, largely because of the lack of active participation by contractors on technical committees that are active in areas relating to contractor performance in the field. Even though these contractor committees have been in existence for only a short period of time, it is encouraging to see how responsive, realistic, and practical they have been in providing input to the Board and reviewing documents referred to them by TAC.

Perhaps it would be beyond our most optimistic hopes to think the creation of these new construction oriented committees will suddenly produce substantial contractor membership and related activities within ACI. But it has been the policy of the Board of Direction to initiate these programs consistent with the objectives of increasing contractor activity in ACI and improving performance requirements so contractors can properly respond. Words such as constructibility, feasibility, tolerance limitations, and many others intended to define the manner in which the contractor performs his work have been both used and abused. With the help of contractor input, we hope that ACI will be able to maintain professionally excellent codes, specifications, guides, and standard practices based on a level of performance that is consistent and practical with the industry's ability to perform.

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## President's memo



As many of you know, our recent past-president, John Goetz, passed away on March 16, 1980. John was not only an outstanding person in his own life but a most dedicated person in the business and spirit of the concrete industry and, in particular, the American Concrete Institute.

I would like to dedicate this issue to John Goetz.

*Charles C. Bowers*

# President's memo



## Why You SHOULD Build in Concrete

It is an established fact that concrete is a great building material. Its performance and versatility, both structurally and architecturally, are in evidence throughout the world. In effect, concrete needs no testimonials other than the buildings, highways, airports, dams, etc., already in existence.

But, it behooves all of us in the business to reflect occasionally on concrete, why we should build with it, what are its drawbacks as well as capabilities, why we should continue to foster its use. Basically, what I am saying is that concrete should not be taken for granted.

Of all the materials available for construction, concrete stands head and shoulders above the rest with respect to flexibility of shape and strength, durability, response, and economics. In addition, it is generally not difficult to procure since its components are available in most parts of the world. All of these add up to the fact that concrete is a versatile material, performs well when properly designed and handled, and is generally available. No other building material offers these traits.

In the past 25 years, we have seen improvements in the capabilities of concrete through the use of high strength steels, prestressing, and high strength concrete. In addition, the concrete construction industry has been able, to an extent better than most, to compensate for rising costs by using automation in areas such as precasting and slip-forming. Obviously, we need to continue these efforts and economize whenever possible.

Despite these improvements, there is still sometimes a reluctance among certain designers and builders to consider concrete for a particular project. This reluctance can be expressed in two ways: "It costs more to design a concrete building than a steel one." "Suppose we design it this way in concrete. Who can we find to build it?"

The answer to the first point is "yes"; it often costs more to design concrete structures than those of steel. By the same token, it costs more to dig for gold than coal. With respect to the second point, this may be a valid argument at times. Not all doctors are surgeons but this does not mean that other types of doctors are not needed. If concrete is automatically eliminated as a building material because of sometimes higher design costs or because the engineer or contractor is unfamiliar with it, then are the best interests of the client being considered? I think not.

For more than 75 years, ACI has served owners, engineers, and contractors by providing a wide range of information and technical data on concrete, its use and performance. These include recommended practices, codes, and other performance related documents to aid those who work with concrete. Utilization of these documents reduces design costs and furnishes guidance with respect to proper concrete design and construction.

One method to overcome the occasional reluctance to employ concrete is to broaden the knowledge of designers and builders and this can be accomplished by greater participation in ACI and its activities. I urge each of you, members and non-members, to not only increase your own interest and activity in the Institute and its functions but to invite others to participate, whether they be designers, materials suppliers, builders, or academicians. By participating in ACI, all of us will find ample opportunities for expanding our knowledge of concrete and its use. Because of this, the answer to "Why You SHOULD Build in Concrete" will be obvious.

It's a great material.



## Concrete repair — in search of technology

Nearly a half-century ago at an annual convention of the American Concrete Institute in Chicago, a special session was devoted to what was then considered to be a relatively new problem — repair and restoration of concrete. At the time, there had apparently been little research done on the subject and this resulted in some pleas for the development of new technology on these matters.

At the 1936 convention, two gentlemen, L. F. Harza and H. G. Roby, identified as Chicago engineers, deplored the fact that while the practice of concrete construction had developed into a "highly skilled art . . . approaching that of a science" not much study had been devoted to repair. "We must learn how to restore or repair old defective concrete so that disintegration can be arrested and so that these investments need not be written off prematurely as a loss." Noting that repair and restoration had not yet been recognized as an engineering rather than a construction problem, the pair asked for a "fair share of attention" from engineers and research laboratories.

Another gentleman at the Chicago meeting presented a paper on "Maintaining Concrete Structures." Frank W. Capp, representing the Portland Cement Association, called for the development of "good practice" in maintenance as had been achieved in design and construction. Capp said, "If the American Concrete Institute . . . can help build up technology in this branch of engineering, it will have added materially to its long list of important contributions to the field of concrete construction."

These historical items are cited here merely to show that ACI has for many years recognized that concrete repair and restoration are just as much a part of the concrete industry as are original design and construction. Also, it is probably true today, as it was in 1936, that the industry has not given as much attention to repair and restoration as they merit. Like so many other things in our fast-paced world, this is an area in which much has been accomplished but in which much remains to be done.

Repair and restoration are probably more important today than at any other time in recent history simply because of economic conditions. We can no longer build anew simply for the sake of doing so. Rising costs and high interest rates dictate that restoration be given the same balance on the scales as afforded new construction. And we need to give closer attention to the various means of restoration and repair so that the job can be done properly.

This issue of *Concrete International: Design & Construction* is largely devoted to repair and restoration. This was done to help all of us understand the problems, to find ways to better accomplish the objectives. Other recent issues of *Concrete International* have been devoted to specific subjects such as tilt-up, parking structures, and guideways. You can add to this collection this special issue on "Concrete Repair and Restoration." We hope you will enjoy reading it and find within these pages some useful ideas, perhaps some matters which will receive your special attention.

And, as Capp hoped for back in 1936, ACI will continue to explore ways to add "materially to its long list of important contributions" to the field of concrete construction.



# Automation in Reinforced Concrete

**I**t should come as no surprise to anyone that high labor costs are not confined to our own concrete industry but prevail throughout the entire construction spectrum. Structural steel, for instance, is plagued by similar problems and would be even less competitive as a construction material were it not for foreign imports.

This means that each project we're called upon to design or build will have to be viewed with an eye to saving costs wherever possible. Many of these projects lend themselves to the use of miniature manufacturing and fabricating processes in modern on-site or off-site precast plants. (And sometimes not very miniature in the case of large commercial precast plants.) It has been through ingenuity and creativity, plus some risk taking attitudes, that precast and other forms of automation in concrete construction have become successful.

The advantages of such automation are abundantly evident in comparisons of older projects, built either with reinforced concrete or competitive materials, with some which have been recently completed in concrete using more modern techniques. For example, a 2,000 sq ft concrete building erected 20 years ago using conventional construction methods was recently duplicated adjacent to the original facility. Automated methods for producing precast and prestressed concrete were used on the new structure, permitting it to be built for approximately the same dollar contract amount. Another example: precast concrete piles utilizing multiple forms were copied six years later by the slipform method, resulting in lower labor costs and a significant savings despite six years of inflation.

In some sections of this nation today, a single carpenter might cost a contractor as much as \$1,000 a week if all items — direct labor, taxes, and fringes — were computed. In the past 25 years, some construction labor costs have risen as much as 1000 percent — not 100 but 1000! Thus, one can appreciate the need for automation in construction. Slipforming did not become a major factor in our industry until construction labor cost increases made it competitive. The same was true, to some extent, with precasting. There has been and will continue to be, a need for improvement to the ratio of material costs versus labor costs such as is possible through automation.

With the trend for even higher labor costs, it is obvious that automation and other labor saving methods and materials which become available must be increasingly utilized in the future. All of us involved in construction, whether as designers, materials suppliers, or as builders have great opportunities to contribute to and participate in the growing use of automation in reinforced concrete construction. While the past 25 years have resulted in significant progress in the reinforced concrete building industry, there is a need for the industry to continue its improvements and technology in the use of more sophisticated materials and the methods in which they are assembled.

Engineers and builders who are willing to initiate the best selection and use of reinforced concrete materials — and provide for innovative methods of constructing them — will be making a major contribution to the continued advancement of the use of reinforced concrete.

# President's memo

## Mr Contractor — ACI Needs You!

(But does he need us?)



Probably at the first convention ever held by ACI — even back in the early 1900's when it was still known as the National Association of Cement Users — someone in the crowd rose to his feet and deplored the lack of contractors in the midsts. "We've got to get more contractors involved. We've got to get them in as members," he undoubtedly declared. And, just as probably, others in the audience agreed with him.

While this may not have occurred at the initial ACI gathering, it surely has happened many times down through the years. "We need to get the contractors as members!" seems to be the age-old chant that has echoed throughout the organization's 76 years in existence.

It is my pleasure to report that the Board of Direction at the convention just ended in San Juan, Puerto Rico, approved the employment of a director of Construction Development within the ACI staff. This will be a first — the first time the Institute has had an agency directly involved in the affairs, the problems, and the needs of contractors. Those of us who participated in the decision at San Juan are extremely pleased the action has been taken. It was a long time coming and, like everything else in our modern world, the results of this decision will not be readily apparent. It will take time to form such an operation and to get it off and running. But at least the impetus is there and we feel certain that some tangible results will be forthcoming just as soon as possible.

However, it behooves all of us — including ACI members like myself who are in the contracting business — to be aware of some pitfalls that might lie ahead. An obvious danger is one that government has a habit of falling into — a problem exists so you create an agency to assume responsibility, throw money at it, and then hope the problem disappears. A cursory glance at what's going on in Washington makes it readily apparent that things just don't work that way.

A second pitfall can be illustrated by the headline of this column — "Mr. Contractor — ACI Needs You!" This is true — we do need them. But an appropos question at this time would be, "Contractor — do you need ACI?" I think it is important to keep this question in mind. Also, remember that ACI is certainly not alone in seeking out contractor membership. There are literally dozens of other organizations, many much larger than the Institute, seeking to expand their membership rosters. I'm certain a contractor's response to ACI membership will result in many responses such as this: "I belong to several organizations right now. I don't have the time (or the money) to join another."

Over the years, ACI has been fortunate in having many contractors as members. We have some contractor-members who have been on our roster for 50 years or more and have contributed greatly to our progress and the work of our technical committee. But they constitute just slightly more than 1,000 of our 16,000 membership, less than 7 percent. We are looking for the aid of these contractor-members and others to assist in the task of getting the new operation going.

At the same time, we need to develop programs and publications of interest to the contractors. Practical guides, manuals to assist them on the construction site, seminars of the "how to do it" type — these are the things we need to develop to arouse the contractor's interest in the Institute and to make him aware of the benefits of ACI membership. This is where our present membership will come into play. The new department will not and cannot be expected to do the job itself. It will need ideas, guidance, and assistance. You, our members, can aid and we certainly expect that you will do so if called upon.

Yes, it's true that, as the headline implies, ACI does need the contractor. But we must make certain that the contractor needs the Institute.

That's the hard part. That's the challenge.

And that's where you come in.

# President's memo



## The Future May be Now!

Two recent publications from the Portland Cement Association are worthy of more than just a passing glance by members of the American Concrete Institute, in my opinion.

First, there is an August 1980, PCA Market and Economic Research Department paper, a portion of which was published in the November issue of *Concrete International: Design & Construction*. The report largely concerned future cement consumption — predictions are for a 10 percent increase over the best previous five years, a forecast based on the assumption that construction in the 1980's will be "stronger" than in the 1970's.

Noting that cement manufacture is an energy-intensive process, the PCA publication pointed out that concrete, unlike steel, asphalt, and other building materials, does not require substantial amounts of energy for production. "Particularly when compared to asphalt, a direct oil product, concrete has become more first-cost competitive, opening new opportunities in paving markets such as streets, parking lots, and road overlays," the forecast stated. It also noted that future cement demand will depend not only on the growth of the construction market but also on "technical and promotional innovations in building materials that will affect their relative competitive positions."

The second PCA document I refer to also appeared in the November issue of *Concrete International*. It was an article entitled, "Should I Promote Concrete?" written by Maurice L. Burgener, group vice-president, PCA's Market Development Department. I found Mr. Burgener's paper to be very interesting and, for those who have not read it yet, I certainly urge you to do so. Those of us in the industry owe Mr. Burgener our thanks for producing some thought-provoking ideas.

Mr. Burgener notes that many persons in technical professions view "sell" as a four-letter word with a repulsion similar to that shown some other four-letter words. If ACI, composed of so many "diverse interests" would undertake a program of "promoting more concrete construction, concrete would easily achieve an overwhelming predominance as a construction material," he said. The PCA official noted that per capita use of cement is lower in the U.S., Canada, and Sweden than in most other industrialized nations. While this is partially due to the fact that many countries in Europe and Asia lack the timber resources of the U.S., Canada, and Sweden, we do not take the trouble to "sell" concrete's superiority as a building material, Mr. Burgener pointed out.

Urging ACI, PCA, the National Ready-Mixed Concrete Association, and other organizations to join together in a national effort to "sell" concrete, Mr. Burgener observed that "these fragments . . . (of the industry) . . . can be cemented into a unified force which will keep concrete in the forefront as the predominant construction material." Sell, according to the PCA official, is indeed a four-letter word but a positive one "because more business for everyone is the result of our efforts."

What more can be said?

Very little except that the future of concrete, as indicated by the PCA experts, is now — but only if we take advantage of it. We need to rid ourselves of the idea that concrete is so great that it will "sell" itself. It is indeed a great building material but, in these modern times, nothing sells itself. Can you think of any product in recent years which has sold itself without advertising or promotion of some kind?

ACI now has more than 15,000 members. What couldn't we do if all of us decided to become concrete salesmen?



## Another Special Issue: Shotcrete

This issue marks the beginning of the third year of publication of *Concrete International: Design & Construction*. Those of us who had a part to play in the launching of this monthly magazine are, I believe, quite pleased at its success. We think that it has taken its place in the concrete industry, that it has and will continue to provide vital, current information to our readers. ACI's long-range goal for *Concrete International*, as with our other publications, is to continue to seek more effective ways to broaden the lines of communications with our 15,000 plus members.

As you probably have noticed, the editors of *Concrete International* on occasion have devoted most of an entire issue of the magazine to a particular subject. This is done in hopes of whetting interest in a certain matter, detailing current practices and methods, and conveying to our readers much practical information on a selected topic. Previous special issues of *Concrete International* have addressed tilt-up construction, parking structures, and concrete repair and restoration. We expect that theme issues during 1981 will include those on bridges, sanitary engineering facilities, and precast concrete design and construction.

This, the initial issue of a new year, consists of articles and papers dealing with shotcreting, a subject which seems to arouse more attention as time passes. While the shotcrete industry is nearly 70 years of age, it has only been in the past two decades that it has come to the forefront as a major factor in the concrete industry. Today, shotcrete is utilized for a variety of purposes and, what with new equipment, materials, and techniques, its future may be very promising indeed.

In his introduction to this issue, Ted Crom, chairman of the ACI committee on shotcreting, notes the group has been functioning now for nearly 20 years and that shotcrete is "still developing, improving, and changing." The committee, according to Mr. Crom, will undoubtedly continue to serve "the industry for years to come."

Mr. Crom's remark about service points to the heart of ACI, its publications, and this magazine. It's part of our chartered purpose — service to members and others through the development and dissemination of information on concrete design and construction. It's what ACI has been all about in its 76 years of existence. And it's what the Institute anticipates doing tomorrow, next year, and 50 years hence.

We hope you enjoy reading this issue and will continue to look for *Concrete International* each month.

And tell us how we can better serve you and your particular area of interest in concrete.

# President's memo



## A Contractor's Term Closes

As my term as president of the American Concrete Institute nears its end, I cannot help but reflect upon a "President's Address" delivered at an Institute convention in Chicago in 1921. I ran across a copy of this particular address sometime ago and was extremely impressed by it — partly because it was delivered by a contractor, partly because of what he had to say about the goals of ACI.

The address was given by Henry C. Turner, then president of the Turner Construction Co. Turner Construction, a long-time member of the Institute, is now one of the giants of the U.S. construction industry. Today, we recall Turner himself for the Henry C. Turner Medal given annually by the Institute since 1928, for notable achievements in, or service to, the concrete industry.

Apparently in 1921, there was some sentiment toward merging ACI with ASCE, ASTM, and perhaps other associations into a single engineering-oriented society. Turner argued against this because only ACI could offer "the thorough and intelligent study of every phase of the industry from concrete products to concrete buildings." He noted that no other organization had "offered or attempted to offer a program to cover thoroughly the concrete field."

Turner also urged that the Institute maintain its goal of providing a "breadth of . . . subjects" for its membership. The success of ACI, Turner said, would be contingent upon keeping a balance between "highly educated engineers" and "men of practical experience and knowledge." These "practical men," according to Turner will not lower the standard of work but will aid the "theoretical members" in devising codes and standards for the common good.

When I hand over the gavel to T. Z. Chastain in Dallas in February, it will be with the hope that Turner's ambitions have been met in the past and will continue to be in the future. All of us need to recognize that the balance between "highly educated engineers" and "men of practical experience and knowledge" is probably more important today than at Turner's time.

During the past year, the Institute's accomplishments have been many and varied — the creation of a construction development department; ACI meeting concurrently with World of Concrete in Las Vegas to name only two — and there are many people who should receive my thanks for their tremendous help to me. However, the list is too long, the names too numerous to be cited here. Also, as you know, the Institute is what it is today not because of its presidents, able as they may have been, but because of the thousands of volunteers out there who give unselfishly of their time and effort to the progress of the organization and its activities.

However, I do want to say a few words about a matter which fits right in with Turner's remarks of 60 years ago. I refer here to the concrete technician certification program which was approved by the Board of Direction at Puerto Rico and now is in the early stages of implementation.

With the advent of this program, ACI will be entering into a new area of endeavor, an avenue down which it has not tread before. We have reached the point where the Institute must accept the leadership in establishment of new programs and procedures to improve the quality of concrete. At the risk of offending some of our valued members, the Institute, in my opinion, on past occasions has not assumed this role of leadership as it should have done; that it has concentrated too extensively on crossing t's and dotting i's. Be this as it may, the caliber of concrete field testing is often a problem and it behooves us to do something about it. Certification is the first step down this road.

In the months ahead you will be hearing more about it. Best estimates are that it will take until mid-1982 to prepare the training materials, educate the instructors, etc. This is a long-term program that hopefully will lead to other long-term programs. The results won't be readily apparent but a beginning must be made.

Thank you for your aid during my term and let's continue to strive toward those goals that Henry C. Turner so aptly spelled out for us 60 years ago.