CHAIRMAN'S REMARKS

The theme of this year's conference at Reno was "Engineering Focuses on Excellence". I wish to thank the moderators of our sessions for their time and creative talent in making the 1987 conference fulfill the theme of excellence. Jerry Seeley, our past Chair, deserves a special thank you for his leadership of the Division and his encouragement and aid to the program chair during the conference.

If you were unable to attend the conference in Reno, highlights of the sessions are included in this newsletter. Part of the excitement of the meeting this year was the city of Reno. Although most of us were busy attending formal sessions and conducting business for ASEE, many of us found time to enjoy the casinos and other attractions of Reno. As one of the "big time spenders", I invested $5 in nickels in the slot machines of several casinos. At the end of my gambling craze I had $4.85. I wasn't one of the big winners, but for 15 cents, I had a fabulous time. In addition to investing in the casinos, those attending this year sampled Basque food at a little place called Louie's and cruised Lake Tahoe on the sternwheeler, Tahoe Queen.

During the last few years, we have been developing guidelines for awards to recognize individuals for their contribution to civil engineering education. This year the process has been completed with the establishment of two awards. The Civil Engineering Educational Services Award, named in honor of George K. Wadlin, will be presented on a continuing basis for notable contributions to civil engineering education and service to the Civil Engineering Division. In order to recognize the work of the authors contributing to the success of the Division, the Best Paper Award will be presented annually to the best paper published in the Annual Conference Proceedings of Civil Engineering Education.

The theme for next year's conference to be held in Portland, Oregon, is "Beginning a New Era in Engineering Education". The program chair for the conference, Noel Tolbert, and the session moderators are currently reviewing abstracts. Please contact Noel or me if you have a paper for the conference or an idea for a session for the following year.

One of the best ways to gain value from your membership in the Civil
Engineering Division is to participate in the Annual Conference and share your ideas with other civil engineering educators. I attended my first annual conference several years ago, not as a speaker or an officer, but as a new faculty member with an interest in engineering education. I discovered on attending the sessions and social events, a relaxed group of friendly people who were enthusiastic about bettering the education process for our young engineers. They shared their failures, successes, and hopes for the future during formal sessions and during informal gatherings after sessions or over coffee. If you have been meaning to participate actively in the Civil Engineering Division, consider combining business and pleasure by coming to Portland in 1988. The family programs are excellent so bring the family on vacation, explore the great Northwest, and meet your fellow members of ASEE.

I am looking forward to a productive year for the Division. If you have suggestions for improving the work of the Division, or concerns you would like to have addressed, please call or write. Our success as an organization depends on the creativity and involvement of our members.

Mardy Thomas
Dept. of Civil & Construction Engrg.
Iowa State University
Ames, Iowa 50010
Ph. (515) 294-3992

Part of the large crowd of Division officers, members, and friends who enjoyed the scenic dinner/dance cruise on Lake Tahoe during the 1987 Annual Conference. Make plans to attend the 1988 meeting in Portland.
GUEST EDITORIAL
by George K. Wadlin

(Editor's Note: In response to reader suggestions, we are resuming the "Guest Editorial" feature of the newsletter. Since ASEE recently approved the Division award named in his honor, it seemed appropriate to have George Wadlin share his thoughts with us. Most of you know Dr. Wadlin has long been very active in many ways in civil engineering education. He served as C.E. Division Chairman in 1971-72, has served on the National Board of Directors, and this year was named a Fellow Member of ASEE. From 1978 to Fall 1986, he was Director of Educational Services of ASCE. George is now in an active retirement career filled with consulting, remodeling his over 130-year old house, following hockey events, serving on numerous technical society groups, and keeping the only copy machine in Stockton Springs, Maine, busy.)

It's always a pleasure to be invited to write a guest editorial for the Civil Engineering Division Newsletter. This is my second opportunity and I feel honored to be invited again. Since I decided to retire to the seacoast of Maine, I guess you are expecting a "down home" folksy-type joke or two. Well, they did have a crime problem in the local discount store the other day in East Eddington. Seems one of the locals tried to hold up the store with the stockboy's pricing gun. He got into the store manager's office and told him to give him all the money in the safe or he'd mark everything down! This must have been the same redneck (from eating boiled lobsters) that was stopped by the police for speeding. When the officer told him the speed limit was 55 mph, he replied he wasn't planning on being out that long!

Well, seriously folks, as all good comedians say, let me tell you that retirement is great. One has time to think for a change rather than reacting to all the deadlines that people, committees and your own psyche put upon you without letup. I think about all the great friends in civil engineering education that I have met and worked beside over the span of almost forty years. This past year, two things occurred that are very special for me. First, to have you in the CE Division honor me with the George K. Wadlin Distinguished Service Award and then to have the ASEE official approval of the establishment of this award is something I will always treasure. Second, to be elected to the honorary title of a Fellow in ASEE is something that comes to only a few and I am still in a state of shock to be in such distinguished company. These are pleasant memories that I think about often. Also, I have replayed the videotapes of my June, 1986 "roast" many times. I can't say enough to express how thankful I am for having enjoyed such great fellowship with you all for all these years.

Although I may be miles from the education scene, I have not lost my contacts with all the education committees and there are continuing things in which I plan to remain active. Things such as the ABET Board of Directors and the problems with accreditation and program criteria (especially design criteria); the restructuring of the ASCE Education Division including greater recognition by the ASCE administrators; the scheduled April, 1990 National Civil Engineering Education Conference; the Engineering Manpower Commission, the data gathering arm of AAES, to name a few. I am sure that as in the past, you will all continue to be of assistance to me when I request it.

Not all is sweetness and light in recent developments. You all know that I retired from my ASCE position a year ago and that my successor has finally been appointed in New York. Unfortunately, he does not come from your ranks. That is the really
disappointing thing for me. A non-civil engineer and non-educator as ASCE Director of Education Services is a distinct break from the three of us who have occupied this position since it was first created (Bill Kimball and Joe McCabe were my predecessors). I know that over 100 civil engineering educators were personally contacted and six were invited to New York for interviews, all to no avail. The major reason for rejection was having to work in New York City and the second was salary. By personal experience, I know that both of these reasons could be overcome. I will do all I can to assist the new Director of Education Services to understand the myriad of challenging jobs involved in civil engineering education. I just feel sort of deserted by academia in not providing a candidate with the education and background required to be a spokesman for civil engineering education and not just a logistical manager. Just when we were in the process of strengthening education’s role within ASCE, a backward step has taken place. Drop me a note on this development if you’d like to. I don’t want to say more publicly.

I’m not sure if I’ll see you all at the other Portland (Oregon, that is) for next June’s ASCE Conference but I’m sure I’ll see a lot of you at various ASCE meetings this Fall. Best wishes to all of you from the great State of Maine. Come visit anytime.

1987 ASCE ANNUAL CONFERENCE
SESSION SUMMARIES

“COMPUTER LITERACY EXPECTATIONS”

The purpose of the session was to explore the computer literacy or fluency expectations of civil engineering graduates from the viewpoint of professors and people from industry. Panelists were Robert Boulware (CALTRANS), Charles Goodspeed (Univ. of New Hampshire), Frank Schaumburg (Oregon State Univ.) and John Wilson (Lehigh Univ.). After a short presentation by each member of the panel, a very lively discussion followed.

During the discussion period many concerns were expressed as to the impact computing and microcomputers were having on the civil engineering curriculum. The discussion centered around what was being sacrificed in order to integrate more computing into the curriculum. The issue of a five-year program was raised. Many were concerned with how microcomputers were affecting the teaching of courses. Are the students learning to use “little black boxes” or are the basic concepts of a particular program being discussed?

Another issue is how much computing knowledge is enough and how much is too much. This topic raised a lot of discussion. Should civil engineering graduates only have the knowledge of a user or is the ability to write a program important? How much knowledge about computer hardware is required?

There were many other topics, (CADD, expert systems, classroom presentation, etc.) discussed by the panelists and the audience. The greatest benefit of the session was that it gave people the opportunity to have a give and take discussion on topics related to computers and the effects computing has on civil engineering graduates and curricula.

Robert M. Henry
Univ. of New Hampshire

“EXCELLENCE IN EDUCATION”

This session consisted of presentations on a variety of topics impacting the quality of civil engineering education as follows: the development of an engineering foundation to provide additional sources of revenue; the impact of a center of
excellence at a university and in particular, its impact on the civil engineering program; and the experience of integrating technical communication requirements into civil engineering laboratory projects. As papers presented during this session, Number 2217, are available in Volume 2 of the 1987 Annual Conference Proceedings.

Dr. William McCarthy, Associate Professor at New Mexico State, described the result of the Civil, Agricultural, and Geological Engineering Department's efforts to provide additional funding for their program through an "Engineering Excellence Fund Drive." An advisory committee to the department composed of alumni, industrial, and government representatives initiated the fund drive. An organizational description of the advisory committee and the mechanics of the endowment fund was presented. A summary of strengths and weaknesses were presented at the conclusion. Dr. McCarthy's paper should be reviewed by departments considering similar activities.

Dr. Dean Adams, Director of the Center for Management, Utilization and Protection of Water Resources at Tennessee Technological University, described the Center's development, structure, and impact on academic programs at Tennessee Tech. The Center was developed as a part of the State of Tennessee Better Schools Program and was to focus on advanced scholarship in both basic and applied research. A portion of the benefits derived from the Center were described as the addition and broadening of faculty, sophisticated research equipment, new research opportunities for both faculty and students, and enhanced prestige of the university.

Dr. Hugh Keedy, Professor of Engineering Science at Vanderbilt University, presented the experience of integrating a technical communication requirement into laboratory-based projects in civil engineering. A three-hour course was developed that combined the previous laboratory requirements of structures, fluid mechanics and soil mechanics. The course was taught with faculty responsibility in each of the three previously described areas. The course was divided into student project teams with formal project written and oral reports required. A structured portion of the instruction covered technical writing. Faculty observations and student reactions were summarized and are given in his paper.

Noel Tolbert
Tennessee Tech. Univ.

"HOW THE COMPUTER ENHANCES CB EDUCATION"

Anis Farah (Laurentian University) provided the following summaries of the papers presented at this session.

Enhancement of Soil Testing Using Microcomputers by Wayne S. Smith, University of the Pacific

This paper emphasized the advantages of using microcomputers in data acquisition especially where simultaneous readings and readings over long periods of time are required, as in the case of the shear and consolidation tests. Furthermore, the microcomputer has the capability of processing the raw data and producing the engineering results of interest immediately after the test. This permits the interpretation and discussion of results during the laboratory session. The author also discussed the data acquisition system which consisted of an IBM PC XT, Labtech Notebook software to control the interface, a Metabyte Das-8 data acquisition and control interface, and measurement instruments suitable for soil testing. The author also discussed the system application in the classroom and concluded that all the expected benefits were realized and no drawbacks were encountered.
Cost-Calc: An Estimating Learning Tool by Fwu-Shiun Liao, Univ. of Kansas

The paper discussed Cost-Calc, a cost estimating program, written by the author. The program is designed for use in construction estimation applications. Cost-Calc is a user-friendly program that simulates the spreadsheet layout in terms of rows and columns. The author pointed out that students are able to run the program in less than ten minutes after being guided by an instructor. The program considers labor, materials and subcontract costs. In addition to introducing Cost-Calc, the paper highlighted the importance of tutorial type programs, the usefulness of electronic spreadsheets and the use of microcomputers in education.

Consultants Evaluate Computer Needs in Civil Engineering Education by Eugene Golub and Raj Khera, New Jersey Institute of Technology

The authors discussed the results of a questionnaire they sent to consulting companies in the New Jersey area. The survey covered the topics of Computer Aided Drafting and Computer Aided Engineering Design (CAED), and solicited the consultants' views on whether these should be integrated into the curriculum and how the time be allocated to teach microcomputers and CAD/CAED. Based on the survey, the authors concluded that engineering colleges should incorporate CAD/CAED into the curriculum, and that the use of microcomputers is still more important for graduate engineers.

Computer Applications in Civil Engineering Education by Siripong Malaseeri, A. Nanni and M.K. Phang, University of Miami

The authors discussed software developed at the University of Miami for helping students with understanding basic principles and their application in civil engineering. The software included three series: Computer-Aided Instruction, Spreadsheet Computer-Aided Analysis and Design, and Integrated Software series. The software is applied in tutorials and in the classroom in several courses such as Statics, Strength of Materials, Structural Analysis and Design, Reinforced Concrete and Steel Design. In addition, an effort was made to integrate commercially available software with in-house developed software. Examples of the capabilities of the software are given in the paper. The authors concluded that the experiment so far has been successful.

Microcomputer Integration Into Construction Education by Sandra L. Weber and Jerald Rounds, Arizona State University

The paper discussed the influence of the change in computer literacy of entering students on the implementation and integration of the computer into the construction education curriculum. They recommended defining entrance competency, establishing objectives and implementing program design, and establishing criterion-based exit competencies. The authors also discussed computing requirements at ASU, and the software, including expert systems, implemented or currently being developed for use in several courses. They concluded that graduates of ASU's construction program are immediately useful to their employers due to their computer competency in both the IBM and Macintosh environments, their education in application-specific software, and their problem-solving skills.

"NON-TECHNICAL ISSUES AFFECTING PROFESSIONAL PRACTICE"

Dean Parsons (CH2M HILL) provided the following summaries of the two papers presented at this session.

Nontechnical Aspects of Engineering Practice in Civil Engineering Education by Joseph S. Ward, P.E.

Four-year undergraduate civil engineering curricula at ABET-accredited programs throughout the
United States often fail to address many facets of engineering that the student will eventually experience when he or she enters the "real world." Several essential non-technical areas that may be added were discussed along with suggestions of ways in which they could easily be incorporated into an already overcrowded curriculum.

**Nontechnical Areas of Engineering**

**Business Concepts.** In addition to a proficiency in the technical role of the engineering profession, the engineer in practice must be conversant with business aspects. Since the engineer usually operates as part of a team, these include principles of office, field, and personnel management. These also include knowledge of budgets and schedules, as well as concepts of profitability and an awareness of the cost of providing engineering services. In addition, the engineer must be knowledgeable about available liability protection.

**Practice of Engineering.** Students should become acquainted with ways in which their technical solutions to problems may be incorporated into overall design. This may be done by comparing theoretical solutions to real job situations, and requires that faculty have experience in the design or construction process.

**Loss Prevention.** The student must be prepared for his or her eventual exposure to the world of claims and lawsuits. Accuracy and completeness of drawings, calculations, and construction procedures are essential, as well as complete documentation of all work done in the office or in the field. Students must be informed that their future work may be subject to critical examination in a potential lawsuit.

**Professionalism.** Students must be made aware of the codes of ethics espoused by the engineering societies. These set the guidelines for attitudes of professionalism that reflect the degree of responsibility to the public that is historically inherent in the engineering profession.

**Risk and Risk Allocation.** Failures are part of the everyday work of the engineer, whether these failures are catastrophic ones, or simply cases in which a facility does not work as it was designed. Students must be made aware of the risk that is associated with every project so that he or she is better able to avoid pitfalls or to cope with them should they occur.

**Incorporation into the Curriculum**

Without adding courses to the engineering curriculum, the above nontechnical areas can be incorporated in several ways. First of all, faculty should have sufficient background in the practice of engineering, primarily by first-hand knowledge, or by extensive reading. To aid faculty, organizations such as the Association of Soil and Foundation Engineers (ASFE) can provide case history materials as well as publications related to business concepts and risk. Seminar programs for students and faculty can supply information from visiting faculty or professionals. Much information can also be incorporated into meetings of the student chapters of the professional organizations. Lastly, students should be encouraged to attend meetings and participate in field trips sponsored by Sections and Branches of ASCE and other national engineering societies.

**Untangling the Web of Professional Liability** by Gary F. Anderson, P.E.

The Association of Soil and Foundation Engineers (ASFE) was founded in 1969 by representatives of ten major consulting geotechnical engineering firms. Its initial goals were to identify the causes of problems resulting in destructive liability claims and then to develop programs and materials to correct these problems.
CAUSE OF PROBLEMS

ASFE believes that the major cause of the growth of liability problems was the erosion of quality, the desire to minimize cost and time encouraged the use of shortcuts. Lack of adequate communication with the client, particularly in educating about the need for high quality, has led to unrealistic expectations. Reducing the number of unknowns leads to more cost-effectiveness, more client satisfaction, and more professional gratification.

ASFE PROGRAMS AND MATERIALS

ASFE has made education a paramount concern: education of members and education of clients. This education occurs through various programs and materials which are discussed below.

Limitation of Liability. ASFE has produced three publications on this subject for geotechnical engineers, owners, and contractors. This concept essentially states that the engineer's liability will be limited to a specific amount, mutually agreed to by the engineer and the client. This concept has been found to be fair and reasonable in court, and there is a strong movement to introduce it to all disciplines of consulting engineers.

Peer and Report Review. ASFE has developed two publications on the subject of peer review, a process through which a firm's operations are reviewed by two or three peers. This process is rapidly being adopted by other engineering disciplines. Report review also fosters peer interaction to identify overall strengths and weaknesses in reports and proposals.

Dispute Resolution. ASFE developed a concept of mediation/arbitration in the mid-1970s that has served as a model for many other innovative approaches. In addition, it has used a system of mutual workscope development in which design is discussed only after the client has determined which firm he or she most wants to do the work. Together, client and firm develop the scope of services uniquely suited to the project, and the fee is established following that process.

Other Programs. ASFE has established other programs such as guidelines for use of expert witnesses in court; compilation of case histories to identify causes of problems; development of educational programs and seminars; and publication of the ASFE Contract Reference Guide, which contains specific contract provisions and alternatives. It includes development of the workscope and a clear definition of mutually binding conditions, both essential components of good communication.

In summary, ASFE, over the past 20 years, has identified problems and provided many tools for their solution. In the past, its emphasis has been on soil and foundation engineering, but its membership will expand in the future to include all consulting engineering firms practicing in the geosciences.

"COMPUTER APPLICATIONS POSTER SESSION AND SOFTWARE EXCHANGE"

Once again, the computer applications poster session and software exchange was a great success. Several speakers presented their papers on computer applications in civil engineering education and practice. Thomas K. Jewell of Union College, presented a paper on the enhanced capabilities of TK Solver. In his paper, Justin Khisty of Washington State University discussed some caveats on the applications of microcomputers for excellence in engineering. Kenneth Mortimer of Valparaiso University told us in his paper that spreadsheets ain't just for bean counters. J.B. Neethling of the University of California, Los Angeles discussed teaching water and wastewater engineering using
microcomputers. Michael K. Stenstrom, also of the University of California, Los Angeles, presented two papers: one, on SEASnet, a network for educational computing, and two on teaching numerical methods for PDE's in a workstation/server environment. George Suckarish of the University of Cincinnati discussed microcomputer applications to value engineering. Overall, the session was enjoyed by the authors and the audiences as well.

Earl S. Mason of the University of North Dakota and Dorairaja Raghu of New Jersey Institute of Technology could not be on hand to present their papers which are published in the Conference Proceedings.

Prahland D. Pant
University of Cincinnati

NOMINATING COMMITTEE REPORT

The nominating committee consisting of past Division Chairmen Colby Ardis and Jerry Seeley has submitted the following nominations for Division officers for 1988-89:

Chair: R. Noel Tolbert
Tennessee Tech University

Vice Chair: Anis Farah
Laurentian University

William Highter
University of Massachusetts

Secretary/Treasurer/
Newsletter Editor
University of Kansas

Jerry Schlittm
John Hopkins Univ.

Florida Institute of Technology
Robert Henry
Univ. of New Hampshire

PREPARE FOR PORTLAND

Mark your calendar for June 19-23, 1988 and plan to attend the 1988 ASEE Annual Conference in Portland, Oregon. The 1988 conference will be held in an on-campus environment with meals on several downtown hotels. The University of Portland will host the conference and will be assisted by a committee of representatives from the Oregon Graduate Center, the Oregon Institute of Technology, Oregon State University and Portland State University.

The CE Division program is shaping up. Here is a preview of what to look for:

Monday, June 20:
"Civil Engineers and Lifelong Learning: Current Practice", Moderator: William Highter
"Civil Engineering Business Luncheon", Moderator: Mardith Thomas
"Civil Engineering Rap Session", Moderator: Mardith Thomas

Tuesday, June 21:
"Who is to Teach Design?", Moderator: David Morris
"Civil Engineering Planning Session," Moderator: Noel Tolbert
"Professional Practice-ABET Requirements and Methods of Implementation," Moderator: Dean Parsons
"Civil Engineering Social and Dinner at the Timberline Lodge," Moderator: Mardith Thomas

Wednesday, June 22:
"Computer Applications in Civil Engineering Poster Session and Software Exchange," Moderator: Prahland Pant
Jerry Seeley distributed the Division annual report. Ed Reitz will chair the membership committee during the coming year. Marv Criswell, chair of the Awards Committee, reported that the Division's two new awards had been approved by the ASEE Awards Committee.

Mardy Thomas reviewed the 1987 Annual Conference activities. She noted that the time slots of several events were shifted this year in order to accommodate the Tuesday evening social event — a scenic bus trip to Lake Tahoe and a dinner-dance aboard the sternwheeler Tahoe Queen. She hoped everyone would take advantage of the opportunity to socialize in a unique setting. Noel Tolbert noted that planning would get underway shortly for the 1988 Annual Conference in Portland, Oregon. Conference theme is "Building a New Era in Engineering Education."

Jerry Seeley reviewed the actions taken by the Division Executive Board at its meeting earlier in the day.

As part of the Ad Hoc Committee on Division History, Colby Ardis (with "Associate" help from Dean Parsons) agreed to compile a list of past Division Chairs.

It was reported that the status of the ASEE representative to ASCE-EDEX has been changed from corresponding member to full member. This means the individual can vote and receive travel funding. Since the EDEX representative had been receiving $250 per year to support travel to EDEX, the Executive Board approved a motion calling for the transfer of that money to the CC&A representative. Thus, the CC&A representative is eligible for $500 in travel support to attend CC&A meetings. This change was unanimously approved by the Division members present.

Dean Parsons circulated a letter from Glen Martin who was unable to attend this year's Annual Conference. Glen
suffered a mild heart attack earlier in the spring and underwent open heart surgery. He is now recovering at his home in Denver. It was moved and unanimously approved that the Division send best wishes to Glen for his recovery.

Respectfully submitted,
Ronald W. Eck
Secretary/Treasurer

PERSONALS

Gene Chesson, past Division Chair, writes "Am enjoying my early retirement (in Prescott, Arizona). Will soon finish a new home — have been laborer, janitor, stone mason, trim carpenter, floor layer, etc. etc." Gene, good luck in your new home; thanks for staying in touch.

(Editors Note: It's good to hear from old friends. If you have been out of touch with Division members due to retirement, sabbatical, illness, or for whatever reason please drop a note to the editor to let us know how you are doing. If there's enough response, hopefully, this section can become a regular feature of the newsletter.)

DIVISION AWARD INFORMATION

The Civil Engineering Division now has two Awards, the George K. Wadlin Distinguished Service Award and the Best Paper Award. Both have received the necessary Society approvals and both will be included in the ASEE Awards Booklet.

The Best Paper Award recognizes the author(s) of the most significant paper published or presented in the Division's activities in the previous year. No nominations are needed for this award, as all papers appearing in Civil Engineering Education during 1987 or both presented at the June 1987 Reno ASEE Conference and contained in the Conference Proceedings will be considered for the first Best Paper Award to be presented in Portland next June. The award consists of a plaque for each author of the best paper.

The George K. Wadlin Distinguished Service Award recognizes sustained distinguished service to the Civil Engineering Division of ASEE, support of its activities and notable contributions to civil engineering education. Nominations for this award may be made by any C.E. Division member. This award also consists of a plaque and will be awarded at a Division ceremony at the ASEE Annual Conference.

AAE encourages the naming of awards after an ideal first recipient. Dr. Wadlin certainly meets this criterion, and can be considered the first recipient of the award, although it had not been formally created and named when a C.E. Division special award was presented to Dr. Wadlin at a roast organized by the Division Chairman Colby Ardis at the 1986 ASEE Annual Conference.

This year's Civil Engineering Awards Committee consists of Marvin Criawell, Chairman; Colby Ardis and Gerald Seeley. The nomination deadline for this year's ASEE awards is expected to be January 15, 1988. You are encouraged to submit nominations of qualified civil engineering educators for the George K. Wadlin Distinguished Service Award. Further information on the Division Awards may be obtained from Marvin E. Criawell, Department of Civil Engineering, Colorado State University, Fort Collins, CO 80523, Telephone (303) 491-5605/5048.
CALL FOR PAPERS

CIVIL ENGINEERING EDUCATION

The CE Division is soliciting papers for review for publication in Civil Engineering Education. They should be typewritten and double spaced. Five copies are required. Titles should not exceed sixty characters, including spaces. Maximum length of articles is 3,000 words. Illustrations should be submitted as black and white glossy photos or ink lined drawings. Note that illustrations may be reduced at least one-half. Footnotes and extensive bibliographies are not generally used. Articles on any and all aspects of Civil Engineering Education are welcome. Address inquiries to:

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