

Civil Engineering Division of the American Society for Engineering Education April 2002

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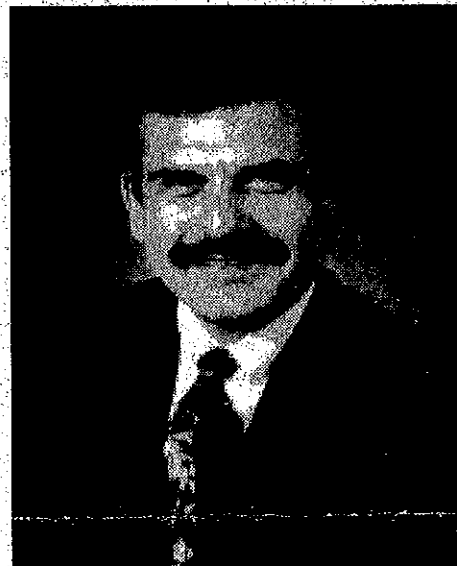
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Greetings from Louisville, Ky. As I write this, we are getting ready for the Kentucky Derby here in Louisville. The week leading to the Derby is full of excitement and anticipation. The festivities surrounding the Kentucky Derby remind me of what we have to look forward to in Montreal. I am looking forward to seeing all of you at the ASEE Annual Conference in June in beautiful Montreal. The planned CE Division program is listed elsewhere in this Newsletter. It promises an array of exciting events, professional debates, and lots of opportunity for exchange of ideas with colleagues. Steve Ressler (United States Military Academy) has served us well as Program Chair this year. Knowing Steve, I am certain the program will be fantastic. Please join me in thanking Steve for a job well done.



I remember some past RAP sessions that were wilder than the infield at Churchill Downs on Derby Day! Steve has continued the practice of showcasing the "Toys in the Classroom" during the RAP session. Only this year we'll have a lot more toys to play with. So, for a taste of the Kentucky Derby in Montreal, be sure to attend the RAP session. We may even squeeze in a horse race or two!

I would like to congratulate the new division officers, Vince Drnevich (Purdue) and Kristen Sanford Bernhardt (Lafayette College). Vince will serve as the Vice-Chair/Program Chair for 2002-2003 and will be responsible for all division activities during the Annual Conference in Nashville, TN in June 2003. Kristen will serve as a Division Director for 2002-2005.

Following the usual rotation, Steve Ressler will replace me as division Chair next year. The Division will be in great hands under his leadership. Good luck Steve and thank you very much for your hard work as Program Chair this year.

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From the Program Chair
2002 ANNUAL MEETING IN MONTREAL

Steve Ressler
U.S. Military Academy

If Montreal is truly "The Paris of North America," then this year's Civil Engineering Division program must certainly be the Champs-Élysées—a broad avenue lined with interesting places to see, things to learn, and people to meet. Here's your guide to the main attractions:

Night Life

Civil Engineering Rap Session and Toys in the Classroom (Session 1815), 7:00 to 10:15 pm, Monday, June 17. This session is free to all members of the CE Division. It will be conducted at the *Modavie Restaurant and Wine Bar* in downtown Montreal. A portion of this event—the Rap Session—will be devoted to an open discussion of issues and concerns in civil engineering education. Session Co-Chairs Ron Welch and Doug Schmucker will also conduct our second annual "Toys in the Classroom" extravaganza—a showcase of physical models and demonstrations that CE educators have used successfully in their classes. Again this year, we offered our "Toys" contributors the opportunity to write proceedings papers about their toys, and seven of them took advantage of the opportunity. These papers are:

- Chainsaws, Rolling Thunder, and Flaming Catapults: High Jinks in the Classroom, *Al Estes*
- Hands-On Demonstrations in Introductory Mechanics, *J. Ledlie Klosky*
- Enhancing Student's Understanding of Key Engineering Concepts Through the Use of Civil Engineering Toys in the Classroom, *Tonya Emerson*
- Instant Insanity and Networks, *Walter Vodrazka*
- Illustration of Shake Table Experiments in Structural Engineering Curriculum, *Lisa Wang*
- Liquefaction Demonstration - A Student Project, *Ronaldo Luna*
- Demonstrating Reservoir Routing in the Classroom: Physical and Mathematical Modeling, *James Kilduff*

If you have a classroom toy you'd like to demonstrate during this session, bring it with you! We've never met a CE toy we didn't like. No toy will be turned away.

And what will the proprietor of the Modavie Restaurant and Wine Bar have to say about Al Estes's demonstration of "chainsaws, rolling thunder, and flaming catapults?" Come to Session 1815 and find out!

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Come Join Us

Program Chair Message

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Civil Engineering Social and Banquet (Session 2815), 7:00 to 10:30 pm, Tuesday, June 18. The ticket price for this event is \$50. It will be held at *Le Parchemin* restaurant. Dinner promises to be fantastic—fresh goose liver terrine, lobster bisque, salad, choice of either filet mignon or fresh Atlantic salmon, vegetables, dessert, and wine. This is an incredible deal for fifty bucks. Don't miss it!

Getting Down to Business

Civil Engineering Division Executive Board Meeting and Breakfast (Session 1115), 7:00 to 8:15 am, Monday, June 17. Ticket price for breakfast is \$15, but you can attend the meeting for free if you don't want to eat. (I personally will need \$15 worth of coffee to recover from the previous night's Society-Wide Picnic.) All CE Division officers, directors, and standing committee chairs should attend this meeting.



Civil Engineering Division Business Meeting and Luncheon (Session 1415), 12:30 pm to 2:00 pm, Monday, June 17. Ticket price for breakfast is \$25 for those who wish to eat lunch. Again, you can attend for free if you don't want food. All members of the CE Division should attend this meeting.

Civil Engineering Division Planning Luncheon (Session 2415), 12:30 to 2:00 pm, Tuesday, June 18. Ticket Price for those who wish to have lunch is \$25. At this meeting we will develop the CE Division technical sessions for the 2003 Annual Conference. If you would like to influence the future direction of our conference program, *please attend this meeting!* If you would like to get involved in the leadership of the CE Division, this meeting is a great place to start.

Chi Epsilon Luncheon" (Session 3415), 12:30 to 2:00 pm, Wednesday, June 19. Ticket Price for those who wish to have lunch is \$25.

Technical Sessions

Prerequisites for Professional Practice (Session 1315). This session will address a two-year study by the ASCE Task Committee on the First Professional Degree and the committee's recommendations with regard to the academic prerequisites for the practice of civil engineering at the professional level. Tom Lenox is the Session Chair. The presentations and principal authors are:

- Background to ASCE Policy 465: Academic Prerequisites for Licensure & Professional Practice of Civil

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Program Chair Message

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Engineering, *Tom Lenox*

- The First Professional Degree - ASCE Policy Statement 465: Where does it stand? *Howard Epstein*
- Why Raise the Education Bar for Civil Engineers? *Jeffrey Russell*
- The Solution: Implementing ASCE's Masters Policy, *Stuart Walesh*

Instructional Technology in CE Education I (Session 1615). This session focuses on using instructional technology to meet educational needs and expectations of civil engineering learners to become better prepared professionals. Instructional technology includes teaching infrastructure (blackboard, whiteboard, computers, overheads, etc.) as well as teaching techniques (active learning, collaborative learning, lecture, demonstrations, group problem-solving, etc.). Doug Schmucker is the Session Chair. The presentations and principal authors are:

- Innovative Teaching Methods In Flexible Pavements, *Yusuf Mehta*
- Powerful Play: Using Toys as Tools in Engineering Education, *Anna Phillips*
- Opening the Black Box: Direct Stiffness Method Uncovered, *Ronald Welch*
- Mathematical Model of Influence Lines for Indeterminate Beams, *Moujalli Hourani*
- Course Transformation Through the Use of Instructional Technology, *Carlos Sun*

Project-Based Education (Session 2215). This session will address open-ended design problems, case-based learning, collaborative learning, communications, and other aspects of project-based education. Carlos Sun and Scott Yost are the Session Co-Chairs. The presentations and principal authors are:

- A Team Oriented, Case-based Approach for a Transportation Engineering Course, *Shashi Nambisan*
- Popolopen Brook Float Bridge Project: Integrating History, Community Service, and Engineering Education, *Ron Welch*
- Enhancing Student Learning through Project-based Education in a Reinforced Concrete Design Class, *Eric Matsumoto*
- A Summer Research Experience for Undergraduate Students in Civil Engineering, *Anant Kukreti*
- Before Senior Design - Integration of Project-Based Learning over a Multi-Course Structures Sequence, *Kevin Sutterer*

Achieving Diversity in the CE Faculty (Session 2515). This session will focus on innovative strategies and techniques, including successful and not-so-successful efforts and best practices for recruiting, developing, and retaining a diverse CE faculty. This session is co-sponsored with the Women in Engineering and Minorities in Engineering Divisions. Kristen Sanford Bernhardt is the Session Chair. The presentations and principal authors are:

- Recruiting and Retaining Faculty and Students - The Role of Faculty Liaison, *Mary Roth*
- Retention of Women and Minority Engineering Educators - Is This Important to Our Profession? *Norma Jean Mattei*
- Recruiting a Diverse Faculty, *Janie Fouke*

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Program Chair Message

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Tomorrow's Civil Engineering Profession (Session 2615). This session will address "big picture" issues confronting CE education and the CE profession. Specifically, the session will focus where are we going as a profession; where we should be going; how we might get there; and what role faculty should play in getting us there. The Session Chair is Vince Drnevich. The presentations and principal authors are:

- What does it mean to be an engineer? The 2001 Challenge to Engineering Educators, *Anna Phillips*
- The Paradigm of Engineering Education, *Gregory Reed*
- Starting from Scratch, *Jeff Wright*

Educational Opportunities within NEES (Session 3115). This breakfast session offers an orientation to the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES). NEES offers unparalleled opportunities for advanced experimental testing, remote participation, and sharing of data. Join this session to discuss methods for using NEES to enhance undergraduate education, develop outreach programs for K-12 students, and improve computational and visualization tools. NEES will provide breakfast for the first 30 participants at the session. The Session Chair is Thalia Anagnos.

Professional Practice in CE Education (Session 3215). This session will address CE professional practice issues, including involving practitioners in the classroom, faculty working in industry, specialty licensure/certification, and rigor in professional development hours. Wilf Nixon is the Session Chair. The presentations and principal authors are:

- Future of Licensure Model, *Walter LeFevre*
- Assessment of Practitioner Interaction in the Classroom, *Enno Koehn*
- Bringing Constructability Issues to Design Courses – What Contractors Want You to Know, *Douglas Cleary*

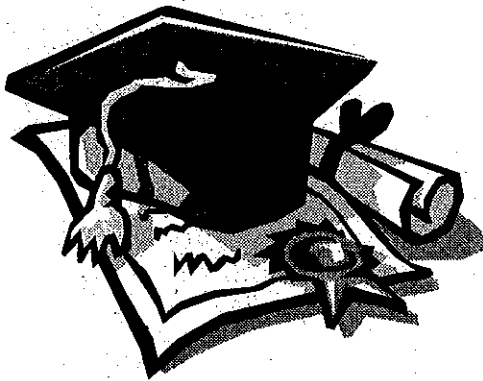
Instructional Technology in CE Education II (Session 3515). This session is a continuation of Session 1615. Ron Welch is the Session Chair. The presentations and principal authors are:

- Teaching Structural Engineering Using a Commercial Program, *Dominique Bauer*
- GROW: A Digital Library for Geotechnical, Rock and Water Aspects Civil Engineering, *John Kemeny*
- Java Applet for Teaching Influence Line Analysis, *Kamal Rojiani*

Projects in Civil Engineering Education: An International Perspective (Session 3615). The session examines the use of projects to enhance civil engineering education, from an international perspective. The session is co-sponsored with the International and Entrepreneurship Divisions. Gajanan Sabnis is the Session Chair. The presentations and principal authors are:

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ASCE Policy 465: Academic Prerequisites for Licensure and Professional Practice
By the ASCE Task Committee on Academic Prerequisites for Professional Practice (TCAP³)



How Did We Get Here?

In October 1998, the ASCE Board of Direction adopted Policy Statement 465, which supported “*the concept of the master’s degree as the First Professional Degree (FPD) for the practice of civil engineering at the professional level.*” This policy generated considerable discussion among the ASCE membership. As a result of this discussion, the ASCE Board formed the Task Committee for the First Professional Degree (TCFPD) in January 1999 and charged it with “developing a vision of full realization of ASCE Policy Statement 465 along with a strategy for achieving this vision.”

The TCFPD researched the education, experience, licensing and certification requirements of other professions; studied the history and forms of civil engineering education in the US and elsewhere; and reviewed current and future challenges to and opportunities for civil engineers. Their work resulted in a report entitled *Engineering the Future of Civil Engineering* (available on www.asce.org) and Revised Policy 465: Academic Prerequisites for Licensure and Professional Practice. The essence of the policy includes the following (note: the underlined text indicates a change to the original Policy 465):

The American Society of Civil Engineers (ASCE) supports the concept of the Master’s degree or Equivalent as a prerequisite for licensure and the practice of civil engineering at a professional level.

In October 2001, the ASCE Board of Direction unanimously adopted Revised Policy 465 while at the same time recognizing that this policy will not be implemented overnight. It will require considerable effort to achieve full realization of the policy’s intent, but the positive consequences for the profession will be immeasurable.

Things Aren’t What They Use To Be

The basis for the policy is rooted in the significant and rapid changes that have occurred in the civil engineering profession. Some of these changes include the following:

- Onset of globalization
- Rapid rise in information technology
- Diversification of society
- Explosion of knowledge and technology in engineering and construction
- Enhanced public awareness and involvement in engineered projects
- Complexity of civil infrastructure systems within the United States

These changes, along with a national trend of reduced credit hours for the bachelor’s degree, have created an untenable situation. Civil engineers are expected to possess simultaneously greater breadth of capability and specialized technical competence than that required of previous generations. With fewer credits in the civil engineering curriculum, it will become increasingly difficult for civil engineers to do more with less. Enter Policy 465.

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Message from the Chair

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I also would like to thank Marvin Criswell (Colorado State University) for his service as Secretary/Treasurer and Dennis Fallon (The Citadel) for editing and producing such an excellent Newsletter for us.

At the close of the ASEE annual awards banquet in Montreal, I will begin my term on the ASEE Board of Directors. I will serve a two-year term as the Zone II Chair, Council of Sections. I thank each of you for giving me the opportunity to serve as the CE Division Chair this past year. It has been an honor. I will continue my support and service to the CE Division while serving on the Board of Directors.

Please feel free to contact me at any time if I can be of service to you as we work together to further the goals of ASEE and the Civil Engineering Division.

J. P. Mohsen

Learnon.org

Learnon.org, the continuing education initiative of the American Society for Engineering Education (ASEE), is the nation's online resource for continuing engineering education and distance learning, offering engineering professionals a searchable database of thousands of courses across all engineering disciplines.

At no cost, engineers can search the database by course subject matter, geographic location, price, or course provider. Listings include traditional classroom courses, distance learning courses, evening courses, weekend seminars and workshops, web-based courses, CD-ROM courses, and video courses; all of which are offered by U.S. engineering colleges and universities and engineering professional societies.

Learnon.org also contains articles, academic papers, conference announcements, news items related to continuing education and distance learning and useful links to all course providers' web sites.

Civil Engineering Conference & Exposition

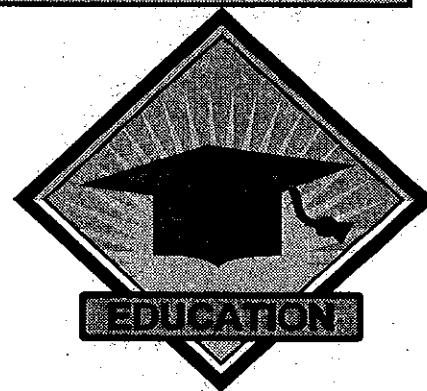
Washington, DC

Nov 3-7, 2002

www.asce.org

2002 ASCE Faculty Advisor Training Workshop

The ASCE Committee on Student Activities (CSA) continues to accept applications for the Faculty Advisor Training Workshop, to be held September 14-15, 2002, in Reston, Virginia. Up to 35 ASCE Student Chapter and Club faculty advisors will be chosen (and funded!) to participate in the training program. This is a fabulous opportunity for faculty advisors to share ideas with each other; learn tips from advisors of outstanding ASCE Student Chapters; meet ASCE World Headquarters staff and CSA members; and learn to utilize valuable resources.



Attendance at the workshop is not restricted to new faculty advisors; advisors of all levels of experience are strongly encouraged to apply. Space is limited, though, so return your completed application today. For your convenience, an application form is available at <http://www.asce.org/pdf/2002fatwapp.pdf>. For more information, contact Ping Wei at (800) 548-ASCE ext. 6106 or e-mail: pwei@asce.org.

ASEE Mission Statement

The American Society for Engineering Education is committed to furthering education in engineering and engineering technology. This mission is accomplished by promoting excellence in instruction, research, public service, and practice; exercising worldwide leadership; fostering the technological education of society; and providing quality products and services to members.

The Society seeks to encourage local, national, and international communication and collaboration; influence corporate and government policies and involvement; promote professional interaction and lifelong learning; utilize effectively the Society's human and other resources; recognize outstanding contributions of individuals and organizations; encourage youth to pursue studies and careers in engineering and engineering technology; and influence the recruitment and retention of young faculty and underrepresented groups.

Program Chair Message

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- Graduate Study in Public Works Engineering and Management at the University of Florida, *Fazil Najafi*
- Design and Developments of Enhanced Component Head Injury Criteria (HIC) Test Device, *Alan Adams*
- Structural Analysis and Design, *George Pincus*

See you in Montreal!

Officer of the Civil Engineering Division

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ASCE Policy 465

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As With Competent Engineering . . . The WHY question?

The most frequently asked question within the profession regarding this important question is—is this change merely for the sake of change? No, it is not. With an eye toward the future of our profession, requiring education beyond the baccalaureate degree for the practice of civil engineering is consistent with other learned professions. The body of knowledge gained, and the skills developed in the formal civil engineering education process, are NOT significantly less than the comparable knowledge and skills required in other professions such as law, medicine, accounting, pharmacy, occupational therapy and others. While four years of formal schooling were considered the standard 100 years ago, over the course of the 20th century, other professions have lengthened their educational requirements as a result of the advances in knowledge and the other changes mentioned above. Engineering, however, has not.

The TCFPD defined the practice of civil engineering at the professional level to mean practice as a licensed Professional Engineer (PE). They further defined admission to the practice of civil engineering at the professional level to mean professional engineering licensing, which requires:

- A body of specialized knowledge as reflected by a combination of a baccalaureate degree and a master's or equivalent (MOE);
- Appropriate experience; and
- A commitment to life long learning.

The required body of specialized knowledge includes a technical core, technical electives, a non-technical core, and technical and non-technical courses to support individual career objectives. The Task Committee on Academic Prerequisites for Professional Practice (TCAP³)—known as “TEE-CAP-CUBED”—is currently working on further defining the Body of Knowledge (BOK) and the MOE.

How Does This Policy Impact Me?

A primary goal of the policy is to change the state licensing laws or rules in the future to require the MOE as a prerequisite for taking the PE exam. There are 55 jurisdictions, each self-regulated. The National Council of Exam-

iners of Engineering and Surveying (NCEES) are currently considering modifying their model law for licensure; a number of alternative models are being considered. ASCE is currently working with NCEES and is advocating that the MOE be incorporated into the forthcoming model law.

Given ASCE's goal and the movement by NCEES, how is the policy likely to be implemented and what will be the impact? For starters, any currently licensed engineer will not be affected by this policy. Civil engineers who do not have an MOE will not be required to obtain one to remain licensed. It is anticipated that each state will select a date in the future by which the MOE will be required as a prerequisite for taking the PE exam, and thus the policy will affect future practitioners.

What about current civil engineering students in the pipeline? For the next 15-20 years, these students will not be required to have an MOE, either. These students will, however, be strongly encouraged to pursue additional education beyond their bachelor's degree.

TCAP³ is currently trying to identify two to four states willing to implement this policy in the next five years. It is anticipated that once a few states adopt the policy, additional states will participate. This was the case with accounting, which is in the later stages of implementing a 150-credit-hour requirement for professional practice. The effort, which began in the mid-1980s, has been successfully adopted by over 40 states, with full compliance expected by 2010.

Let's Be Realistic . . . How Long is it going to take to implement?

TCAP³ and ASCE have a vision for an enhanced role for civil engineers in the year 2030 and beyond. This policy is directed toward the *future* of our profession. The implementation of this concept will not happen overnight. ASCE cannot mandate how and when it will be implemented, or who will implement it. To be sure, ASCE will be an active partner with ASCE members, other engi-

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National Student Conference—Madison, Wisconsin



The countdown has begun for ASCE's 150th Anniversary National Student Conference taking place June 21-24, 2002. This is the first and only time the National Concrete Canoe Competition and the National Student Steel Bridge Competition will take place at the same venue. In addition, attendees will also be able to participate in a host of other events including the Career Fair & Exhibition, a Paint-A-Thon, field trips, team competitions and leadership sessions.

It is anticipated that this event will draw over 1,500 students. This is a great opportunity for employers and exhibitors to meet with the next generation of civil engineers. If you are interested in participating in

the Career Fair & Exhibition there is still time and limited space is available. For more information on the career fair, go to www.cae.wisc.edu/~150/Career_fair.

West Point Bridge Contest Draws Large Numbers of Participants

Steve Ressler, U. S. Military Academy

In previous editions of this newsletter, I have provided updates on our planning for the West Point Bicentennial Engineering Design Contest—a nationwide Internet-based K-12 competition aimed at commemorating the engineering heritage of the U.S. Military Academy, while also promoting math, science, and technology education in high schools and middle schools around the U.S. Now I am happy to report the successful conclusion of the project.

The Qualifying Round of the contest began on November 11, 2001, and ended on February 28, 2002. During this period, over 19,000 student teams registered on our contest website (<http://bridgecontest.usma.edu>), downloaded the West Point Bridge Designer software, and used the software to create bridge designs. Ultimately over 54,000 designs were submitted to the contest website for automated judging. During this same period, nearly 50,000 copies of the West Point Bridge Designer were downloaded, and our website averaged approximately 1400 hits per day.

On March 16, we conducted our Semi-Final Round—again using the Internet to facilitate the event. Competing at locations of their own choosing, the top 70 teams from the Qualifying Round received a new design project and had just three hours to create and submit a design. The top seven finishers received an all-expenses-paid trip to West Point for the Final Round on April 27. On that day, the seven finalists competed head-to-head for the top three prizes—cash scholarships of \$15,000, \$10,000, and \$5,000. Members of all seven teams also received notebook computers for their efforts.

The contest generated a good deal of favorable publicity, including articles in *Parade* magazine, *USA Today*, the *Chicago Tribune*, and numerous local newspapers and education magazines. Our publicity campaign was much aided by the American Society of Civil Engineers, our primary sponsor. *ASCE News* ran numerous articles about the contest, and rank-and-file members of the ASCE Sections and Branches actively promoted the event in their local communities. We also got a lot of wonderful feedback from teachers and students. This comment is typical:

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ASCE Policy 465

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neering professions, the National Society of Professional Engineers (NSPE), the National Council of Examiners of Engineering and Surveying (NCEES), state licensing boards, the Accreditation Board for Engineering and Technology (ABET), deans, department heads/chairs, and faculty to achieve this policy directive. Still, the ultimate full implementation will probably not occur for 20 or more years. However, this concept is a legacy for future generations of civil engineers. It will provide tomorrow's civil engineer with a body of knowledge, appropriate experience, and overall outlook to be leaders and integrators of the engineered environment.

Questions

For more information, please contact Jeff Russell at Russell@engr.wisc.edu, Stu Walesh at STU-WALESH@aol.com or Tom Lenox at tlenox@asce.org.

CEE
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West Point Contest

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"The Bridge Design Contest was an adventure. Educational, fun, competitive, work—most everything rolled into one package. The students are mentally exhausted and almost lost without another day to take just a few minutes to consider another design improvement. All of my student-competitors are seniors, but many of the upcoming sophomores and juniors are interested in participating next year. Thank you."

A particularly significant aspect of the contest is that it was created, coordinated, and conducted by just four people—three full-time faculty members (with full-time teaching and administrative responsibilities) and a single part-time staff coordinator. By leveraging the power of the Internet, our team was able to positively impact over 20,000 kids without creating an unwieldy contest infrastructure.

Now it is done, and we shall try to get some sleep.

"Non-Profit Org."
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