

Changes to licensing process coming soon

The Licensure Qualifications Oversight Group (LQOG) was given its official “get-to-work” authorization at the 2003 Annual Meeting in Baltimore by an overwhelming vote of Member Boards. Over this year and the next, LQOG will review and evaluate the findings of the NCEES Engineering Licensure Qualifications Task Force (ELQTF).

The Council launched ELQTF some two and a half years ago to address concerns regarding the U.S. engineering licensure model. ELQTF was designed from the outset to capture the vision of the engineering profession as represented by a variety of professional and related associations. The engagement and participation of these associations were crucial to the success of ELQTF, and their input is reflected in the committee report and results, which Chair Jon Nelson presented to the Council body at the 2003 Annual Meeting. This important report—available on the NCEES Web site (www.ncees.org)—is required reading for every member of the Council who wants to stay connected to the on-going review of the engineering licensure model.

LQOG's role is a complementary one: to bring the ELQTF findings “inside” NCEES for additional thorough inspection. Just as it made great sense for NCEES to be the facilitator for acquiring, sorting, debating, reconciling, and presenting the broad range of input from various professional associations, it makes sense for NCEES to play a parallel role on behalf of its Member Boards. LQOG was formed for this purpose. It exists to take the results and findings from the ELQTF report which address identified deficiencies in the current licensure system, and illuminate those results that are suitable for widespread implementation by our jurisdictional regulating bodies.

In general then, LQOG's process is to (1) examine the ELQTF results under the bright light of public

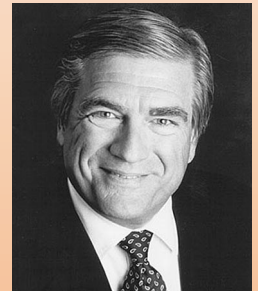
health, safety, and welfare; (2) determine the impact of ELQTF recommendations on Member Boards and the Council; (3) assemble the best ideas—fine-tuning if necessary—into a package to carry forward; and (4) develop an implementation plan to facilitate adoption of these principles throughout our licensing jurisdictions. I believe that if this process is followed, the outcome will not result in merely a patch here and there on the existing licensure system, but will constitute a self-contained and integrated whole.

LQOG is made up of 20 talented and dedicated men and women: members and staff of Member Boards; NCEES emeritus members; engineers and surveyors hailing from Alaska to Florida and from California to New Hampshire, including states with permissive licensure laws and states with restrictive laws. Its members represent, in short, a solid cross-section of the Council. LQOG is not, however, stopping there. It is actively seeking the thoughtful input of all Member Boards. LQOG has instituted a program to keep in contact with a representative of each engineering Member Board to ask questions, give information, and generally keep the licensure dialogue going. LQOG has already circulated to Member Boards a “mini-survey” of five points relating to LQOG's current thinking.

LQOG last met in November 2003. The group debated issues of substance and recorded preliminary recommendations. The oversight group learned what some of the “slam-dunk” ELQTF recommendations are and where some of the controversy may lie. It is gratifying, though by no means pre-ordained, that many of the concepts that received broad support in ELQTF (representing the profession) are likewise receiving broad support in LQOG (representing NCEES Member Boards).

LQOG's work will be presented at the 2004 spring zone meetings and I hope will generate much thoughtful discussion. The oversight group

*As Charles Darwin said,
 “It is not the strongest
 of the species that
 survives, nor the most
 intelligent, but the one
 most responsive to change.”*



William “Bill” Sutherland, P.E.
 Chair, Licensure Qualifications
 Oversight Group

Changes to licensing process ... (continued from page 1)

also intends to present substantive, if interim, results to the delegate body at the 2004 Annual Meeting and anticipates completion of its work in 2005. The outcome will be specific recommendations to the Council that, if approved, will be incorporated into the Model Law and other instruments by the subsequent work of appropriate NCEES committees.

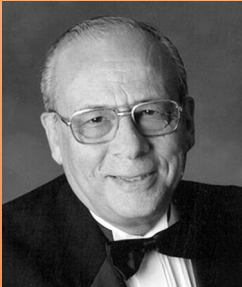
LQOG and the Council at large are facing some of the same challenges that the initial proponents of engineering licensure must have faced a century ago. Our licensure model has evolved since then and is now poised for the next step in that evolution. The ideas that have survived the ELQTF/LQOG process thus far have been well-deliberated and are of high value. This forthcoming evolutionary step will be successful if the Council can develop and support a model relevant to the

foreseeable (key word) future, even if it requires a bit of a stretch in thinking. As Charles Darwin said, "It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change."

Read the ELQTF report. Connect its recommendations to your activities as board members or administrators. Ask your board's LQOG contact about the LQOG mini-survey, and stay in the loop. Visualize the impact on the public of a new licensure system with more reliably and consistently qualified professionals. Imagine a world with a significantly increased proportion of engineering practitioners within the licensure fold. We are at the threshold of new and great things. Be there.

*William "Bill" Sutherland, P.E.
Chair, Licensure Qualifications Oversight Group*

New Jersey Board visits engineering colleges to promote licensure



*Louis A. Raimondi, P.E., L.S.
NCEES Northeast Zone
Vice President*

In an effort to promote licensure, the New Jersey State Board of Professional Engineers and Land Surveyors has formed a committee to visit with the deans and presidents of New Jersey's institutions of higher learning to discuss the value and benefits of engineering licensure. During its visit, the committee emphasizes that engineering faculty should be licensed and that engineering colleges should explain the process of licensure to students in order to prepare them for the Fundamentals of Engineering (FE) exam and their future. To date, Board members Edward Vernick, P.E., and Rishi Raj, Ph.D., have met with representatives of the New Jersey Institute of Technology and have plans to meet with representatives of Princeton University, Stevens Institute of Technology, Rutgers University, and Rowan University.

Committee members report that discussions held thus far have included typical questions, for example: Would professors receive credit for their higher degrees and not have to take the FE exam?



Would teaching experience count toward engineering experience? (In New Jersey, a candidate for licensure must show two years of original design experience as part of the required four years of experience.) The committee also presented various viewpoints on issues related to licensure, including raising the academic standard for licensure from a bachelor of science degree to a master of science degree in engineering and requiring the successful passing of the FE exam as a prerequisite for graduation.

The committee reported that its first visit went well and that members are looking forward to meeting with the other college representatives in the near future. At the conclusion of the visits, the committee plans to invite all the institution representatives to gather for a joint meeting with the full New Jersey Board in order to continue discussions and formulate plans for the promotion of licensure in the state of New Jersey.

*Louis A. Raimondi, P.E., L.S.
NCEES Northeast Zone Vice President*

PRESIDENT

Thinking differently about education and exams

One of the many privileges of serving as your President is to have a close-up view of the commitment and expertise our NCEES family displays when carrying out its many responsibilities. By the time this issue of the *Licensure Exchange* is in your hands, our 20 committees, task forces, and groups will have met at least once (via conference call, e-mail, or face-to-face) to develop plans of action, recommendations, or proposed motions in addressing their charges. In the following, I will address some of the items that each of us can expect to hear more about before and during our Annual Meeting in August.

Providing quality licensing examinations to Member Boards and developing guidelines for safe, secure, and comfortable exam administrations is a large part of the NCEES focus. Four committees and two task forces are directly involved in this effort.

The **Examination Audit Committee** will review all aspects of our examination process to ensure that recognized and accepted psychometric standards for licensing examinations continue to be met. As a part of this audit, the committee will ensure that the reviewed examinations meet the approved specifications and that the items are written at the appropriate level of difficulty.

The **Committee on Examination Policy and Procedures (EPP)** has a number of charges, including one tasking the committee with revising "Exam Policy 15 to provide that only models of calculators as specified by NCEES are permitted in the examination rooms." The EPP chair, Bill Dickerson, presented an excellent article in the last edition of the *Licensure Exchange* in which he addressed the "calculator issue." If you have not read his article, I strongly recommend that you do so. The question of which calculators are permissible for NCEES examinations has probably caused more discussion and disagreement than any other recent issue facing NCEES. In an effort to think outside the box, I have asked EPP in coordination with the Committee on Examinations for Professional Engineers (EPE) and the Committee on Examinations for Professional Surveyors (EPS) to explore the feasibility of developing exams that would not require the use of

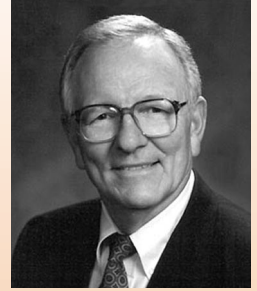
calculators. Such exams may not be feasible or realistic, but the committees have accepted the challenge and are giving the concept due consideration.

The **EPE** and the **EPS Committees** continue to oversee the development, appropriateness, and maintenance of examination items. EPE is currently investigating the use of codes and standards in exam questions, in regard to how quickly the codes and standards change. In addition, EPE is investigating the viability of a Principles and Practice of Engineering reference handbook. The EPS Committee has approved the new exam specifications submitted by the PAKS—Land Surveying Committee. In preparation for the new exams, to be administered for the first time in October 2005, EPS is updating the Fundamentals and Principles and Practice of Land Surveying Sample Questions and Solutions books. EPS will also examine the viability of a PLS reference handbook.

The **Exam Security Task Force** will continue this year. Members will explore the "feasibility of establishing one uniform administration system for all exams in order to ensure consistency and minimize security concerns." The task force has had conference calls to discuss this matter and will be making recommendations for the Council's consideration.

The **Exam Administration Task Force** was appointed this year. It is made up of a Member Board Administrator and a professional surveyor or engineer from each zone. Members are developing a standardized information packet for all exam candidates that will be distributed at the time of application. Also, they are reviewing existing exam policies and the Council's *Administrative Procedures Manual* in order to recommend any policy or procedure changes.

The **Licensure Qualifications Oversight Group (LQOG)** and the **Education/Accreditation Task Force (EATF)** are soliciting involvement from individuals outside their committees. LQOG members have distributed a survey to Member Boards concerning several issues under consideration. Look for an article in this issue from Bill Sutherland, chair of LQOG, for additional comments concerning the



Donald L. Hiatte, P.E.
NCEES President

Providing quality licensing examinations to Member Boards and developing guidelines for safe, secure, and comfortable exam administrations is a large part of the NCEES focus.

Thinking differently ... (continued from page 3)

group's activities. EATF has Larry Nixon, P.E., ABET Immediate Past President, and George Peterson, ABET Executive Director, serving as consultants. Both attended the last EATF meeting and were active in the discussions. ABET has formed a committee to review engineering education and has included on the committee the chair and vice chair of EATF as well as NCEES Executive Director Betsy Browne and NCEES Emeritus Member Dave Gibson. (Dave Gibson serves as NCEES representative to the ABET Board of Directors.)

I encourage you to attend your spring zone meeting if at all possible. You will have great fellowship and every committee, task force, or group has been given the following charge: Ensure that the significant issues of the committee/task force/group are presented to the Council at each zone meeting by either a committee member who is attending the meeting or the Zone Vice President.

*Donald L. Hiatte, P.E.
NCEES President*

<http://www.ncees.org> **NCEES moderates live chat on “How to Get Licensed”**

National Engineers Week: Connecting the World to Engineering

In connection with National Engineers Week, February 22–28, NCEES will moderate a live chat on the topic “How to Get Licensed.” Designed to target university-level engineering students, this chat is one of many sponsored and moderated in conjunction with the 2004 EWeek program Connecting the World to Engineering.

Connecting the World to Engineering is designed to “encourage and maintain interest in engineering for engineering undergraduates,” reports the January National Engineers Week news release. It continues: “While many engineering societies already host professional and technical forums, Connecting the World to Engineering is the first engineering initiative for global linkage across countries, business and academia, and engineering disciplines. Connecting the World Internet forums will launch during National Engineers Week on Monday, February 23 and continue through the year.”

In addition, the Council is sponsoring the National Engineers Week Future City Competition™ for the first time. The news release says, “In Future City, students work under the guidance of teachers and volunteer engineers to build computer and three-dimensional scale models of cities of

tomorrow. Students present their designs before a panel of engineer judges at the competition, and write an essay.” This year, NCEES Past President Bob Krebs, P.E., L.S., will serve as one of the judges. He will ask participants surveying-related questions about their model cities and present a surveying award, Best Land Surveying Practices, sponsored by NCEES. The Future City national finals are February 23–25, 2004.

The news release explains the concept behind EWeek: “National Engineers Week, founded in 1951 by the National Society of Professional Engineers and sponsored by more than 100 engineering, scientific, and education societies, and major corporations, is dedicated to increasing public awareness and appreciation of engineering and to promoting pre-college interest in math, science, and engineering as a career option. Engineers Week is celebrated annually by thousands of engineers, engineering students, teachers, and leaders in government and business.”

Look for more information regarding National Engineers Week and NCEES-specific activities in the April issue of *Licensure Exchange*.

Deserve your license

Serving as a fire protection engineer on the Minnesota Board of Architecture, Engineering, Land Surveying, Geoscience, and Interior Design expanded my knowledge and appreciation of the diverse needs of licensed design professionals. Being appointed by former Governor Arne Carlson and serving for four years, two as chair; were an honor and a privilege.

The board's mission is to provide reasonable assurance that design professionals practice competently and ethically in order to protect the health, safety, and welfare of the citizens of Minnesota. Education, examination, and experience establish the foundation of professional practice enforced by the board. During my service, the 21-member board, 16 from the design professions and 5 from the public at large, had responsibility for 17,000 licensees and certificate holders, less than 40 of which are fire protection engineers. Minnesota licenses design professionals related to their general profession (engineer; architect, land surveyor; and so forth) and not by specific engineering discipline. The board's activities center on the design and construction process, given the presence of industrial licensing exemptions for engineers in certain employment settings such as government or manufacturing.

During my tenure as chair, I inherited a board with scarce resources and an unstable budget; communicated with legislators concerned about ineffective statutes and overregulation; withstood an unsuccessful lawsuit against the board; skirted a movement to abolish the board by a disenfranchised minority; wrestled with the development, maintenance, and enforcement of Minnesota Statutes and Promulgated Rules; tackled fire sprinkler licensing issues; addressed title and practice act issues; and managed formidable continuing education, ethics, examination, and licensing issues. Through it all, I was blessed with competent and collaborative board members and a gifted executive secretary. Along the way there were some tough decisions—sometimes the choices were between two unpopular options, other times it was more clear-cut. At times, rigid state statutes and rules blocked common-sense decisions. For the most part, the board effectively met its mission head on. The most difficult part of my job, even when the facts were indisputable, was the emotional strain of revoking a license of a practicing professional. I always did it in person.

I rarely thought of issues specific to fire protection engineering during my time as chair. Essentially, the

broader challenges facing design professionals affected fire protection engineers. I set aside my personal professional interest so that I could adequately serve the design professions, execute our mission, and protect the health, safety, and welfare of the citizens of the state of Minnesota. There are several issues into which I gained insight as a result of my experience on the Minnesota Board. The following are some of my thoughts.

The value of the profession of engineering is being challenged from many directions.

The public questions the value of having a P.E. license. Is engineering dead as a profession as we know it? Call it apathy, market efficiency, or professional abdication; having a P.E. is not what it used to be. The public and even some state agencies question the value of mandating a licensed professional in design. For example, in certain circumstances, Minnesota law does not require a licensed engineer to design bridges.

A new design and construction paradigm is emerging, and state licensing boards, with the help of the engineering community, will need years to figure it out. The lines between design, layout, and installation are blurred. Today, design and construction is a collaborative process which is fluid and flexible. The public is demanding that we break down the walls and end turf battles between the different entities in the building design process. As engineers, we must listen to the public, view the trends, and embrace the challenges. Our survival depends upon it. The licensing board lags behind in the development of appropriate regulations.

Laws can mandate requirements for a licensed professional, and in the short term, they may create a demand. But the public at large can find other ways to satisfy its needs. The public is way too clever and will find ways to avoid (not evade) licensing laws. Of the fastest-growing design-construction-related firms in the state of Minnesota, none of them are pure consulting engineering or architectural firms. A "one-stop shop" is a mantra to many.

Budget pressures continue to challenge boards to find means of effectively conducting their duties. The Minnesota Board focused energy on hiring investigators to follow through on complaints and enhancing educational efforts. Increasing the number of volunteers to participate in the process has far greater benefits than just relieving budgetary



Michael A. O'Hara, P.E.
Former member and chair,
Minnesota Board of
Architecture, Engineering,
Land Surveying, Geoscience,
and Interior Design

The most difficult part of my job, even when the facts were indisputable, was the emotional strain of revoking a license of a practicing professional. I always did it in person.

PURPOSE

The purpose of this Council shall be to provide an organization through which state boards may act and counsel together to better discharge their responsibilities in regulating the practice of engineering and land surveying as it relates to the welfare of the public in safeguarding life, health, and property. The Council also provides such services as may be required by the boards in their mandate to protect the public.

Constitution Article 2 Section 201

(continued on page 16)

UPDATE

NCEES will provide proctors with illustrations of calculators



Betsy Browne
NCEES Executive Director

The Structural II exam will be given for the first time in a new format. Based on the latest specifications, the Structural II exam will have four essay problems instead of two. In addition, examinees will be required to pass both the morning and the afternoon portions of the same administration.

For Council staff, the turn of the year is an energizing time. It is the beginning of several seasons of activity, including preparation for the Annual Meeting, committee meetings, and the April exam administration. This year, in addition to those and other on-going pursuits, staff is preparing for the March 21 building dedication. Members of Member Boards are invited, and we hope to have a good turnout for the "christening" of the Council's new addition and renovated building.

The spring exam administration will be held April 16–17. The Structural II exam will be given for the first time in a new format. Based on the latest specifications, the Structural II exam will have four essay problems instead of two. In addition, examinees will be required to pass both the morning and the afternoon portions of the same administration. (For more information about the exam, refer to the NCEES Web site, www.ncees.org, or the December 2003 issue of *Licensure Exchange*.) The April exam offers evidence of the growth of ELSEES, the Council's exam administration affiliate. In October 2003, ELSEES administered exams for 18 Member Boards, and in April 2004, ELSEES will administer exams for 25 Member Boards. Also for the April exam, we anticipate another fast turnaround of scores. For the October administration, exam scoring released to Member Boards the results of the land surveying exams at three weeks and four days post-administration, results of the PE exams at five weeks and three days; and the Structural II results at six weeks and three days post-administration. Excellent turnaround times—especially when we consider that our deadlines for returning scores were much greater just a few years ago. We had a goal of eight weeks to return the LS scores and 12 weeks for the PE scores!

As you know, the capabilities of high-end calculators continue to grow. I imagine the limit to their features rests only with the creativity and curiosity of human beings. This past summer, Council staff members downloaded specifications from the Internet, ordered parts, and modified two typical high-end calculators. With such modifications, two users were able to "chat," though separated by walls and a hundred feet. At the 2003 Annual Meeting, staff demonstrated the ease of entering exam data into such a high-end calculator. As a result of the above and other research, the Board of Directors recognized that NCEES

exams were vulnerable to compromise through calculating devices brought into the exam room. The Board had no choice but to take action to protect the integrity of the engineering and surveying licensing exams and, ultimately, the integrity of the licensing process itself. The Board voted to strictly enforce Exam Policy 15, prohibiting in the exam room calculators with text-editing and communicating capabilities, beginning with the April 2004 administration. Several Member Boards moved to strictly enforce EP 15 in their jurisdictions for the October 2003 administration as well.

Member Boards have been in contact with NCEES staff as they have worked to determine the best way for proctors to enforce Exam Policy 15 on exam day. To aid Member Boards in this effort, staff has compiled various examples of calculators that violate EP 15. This list of examples is included in this issue (see text box) as well as on the NCEES Web site, www.ncees.org. In addition, for every Proctor Manual that a Member Board orders for the April exam, the Council will also include a color "manual" with pictures of calculators that violate EP 15 and pictures of calculators that are not in violation of EP 15. This manual will not be an all-inclusive list of prohibited or permissible calculators—only an illustrated guide. In anticipation of the October 2004 exam, the Committee on Examination Policy and Procedures is charged with "revising EP 15 to provide that only models of calculators as specified by NCEES are permitted in exam rooms." The committee's response to the charge will be an item for discussion at the spring zone meetings and the Annual Meeting in Cleveland, Ohio.

Speaking of zone meetings, I hope each of you are making plans to attend. The first zone meeting is scheduled for April 1–3 in Las Vegas for the Western Zone. After that we will travel to Portland, Maine, for the Northeast Zone Meeting, April 22–24. The Southern and Central Zone meetings are back to back, with the Southern Zone meeting in Asheville, North Carolina, May 13–15, and the Central Zone in St. Louis, May 20–22. I look forward to seeing you—and discussing the important topics on our agenda for the upcoming Annual Meeting!

Betsy Browne
NCEES Executive Director

Policy 15

Calculators and the April 2004 Exam

For the April 2004 and future exam administrations, NCEES will strictly enforce Exam Policy 15. This policy prohibits in the exam room any calculator or device that has communicating or text-editing features that may compromise the security of the exams or the exam process.

To provide Member Boards with guidance in determining which calculators violate EP 15, NCEES has compiled a list of examples. The first group of calculators below either have communicating or text-editing capabilities and are prohibited in the exam room. They have been used by many examinees during previous exams. The calculators listed in the second group are permissible inside the exam room. Please remember that neither list includes all prohibited nor permissible calculators.

Examples of calculators prohibited in NCEES exam rooms

Casio, CFX9850+
Hewlett Packard, HP 41 series, HP 42S, HP 48 series, HP 49G
Texas Instruments, TI-83, TI-83 Plus and Plus Silver Edition, TI-85, TI-86, TI-89, TI-92, TI Voyage 200

Examples of calculators permitted in NCEES exam rooms

Casio, FX-115 MS PLUS, FX-250 HC
Hewlett Packard, HP-9 series, HP-30s, HP-32s, HP-33s
Sharp, EL-506 VB, EL-520 VB
Texas Instruments, TI-30 series

For more information, please refer to the NCEES Calculator Policy FAQs at www.ncees.org/exams/calculators or contact NCEES at 864-654-6824.

All articles within *Licensure Exchange* may be reprinted with credit given to this newsletter and to NCEES, its publisher, excluding those articles and photographs reproduced in *Licensure Exchange* with permission from an original source. The ideas and opinions expressed in *Licensure Exchange* do not necessarily reflect the policies and opinions held by NCEES, its Board of Directors, or staff. *Licensure Exchange* is intended to serve as a medium for the exchange of experiences and ideas for improving licensing laws in the interest of public safety.



Patricia D. Galloway, PE,
President, American Society of
Civil Engineers

Most of the senior members of our profession likely graduated from baccalaureate programs that required 145 to 160 credits for graduation. The norm today typically ranges from 120 to 135, and these requirements continue to be reduced steadily, not by engineering programs but by universities and legislatures.

Bachelor's Plus

ASCE says “raise the bar” in engineering education

For the past 10 years, the American Society of Civil Engineers (ASCE) has been formulating and implementing a program to encourage “raising the bar” in engineering education. As a starting point, ASCE adopted Policy Statement 465 which formally advocates additional education beyond the bachelor's degree as a prerequisite for professional licensure in the future. Clearly, this initiative would affect the current education qualification for engineering licensure in each adopting state, but ASCE hopes it will also be considered as an amendment to the NCEES Model Law. Consequently, interaction with NCEES is an important and early part of our implementation process.

Trend of engineering practice

The practice of civil engineering continues to grow increasingly more complex. Because of the rapid rise in information technology, the explosion of knowledge in engineering and construction, enhanced public awareness and involvement in engineered projects, and the growing complexity of civil infrastructure systems in the United States, the job performed by the civil engineer continues to become more demanding. This trend is likely to accelerate in the future. Civil engineers are expected to possess both greater breadth of capability and greater specialized technical and managerial competence than was required of previous generations.

Trend of engineering education

Most of the senior members of our profession likely graduated from baccalaureate programs that required 145 to 160 credits for graduation. The norm today typically ranges from 120 to 135, and these requirements continue to be reduced steadily, not by engineering programs but by universities and legislatures. The effects of such reductions are significant on engineering programs and their coverage of technical and managerial subjects. This trend is also likely to continue into the future; there is no indication of its reversal. How can engineers continue to do more, with less education?

The body of knowledge (BOK) and the skills required to practice civil engineering at the professional level are not significantly less than the comparable knowledge and skills required by



many other professions. Yet the minimum education requirement for civil engineering—a four-year bachelor of science in civil engineering (BSCE) degree—falls short of the requirements for many other professions including accounting, architecture, occupational therapy, pharmacy, law, and medicine. Accountants in the United States are nearing completion of a 15-year transition to require 150 semester credits for CPA licensure.

The combination of added educational demands and declining credit-hour requirements has had a significant impact on undergraduate engineering education. There has been a decline in the required core engineering coursework that crosses discipline lines. Civil engineers are increasingly less likely to be required to take courses such as thermodynamics and electrical circuits, affecting the breadth of their technical education. Some engineers now take a one-semester course titled statics/dynamics. Basic engineering coursework requirements within disciplines are also decreasing in many universities, as evidenced by transportation engineers who have not had surveying and thus lack the basics of geometrics, or electrical engineers who understand power distribution but not controls. Further, the practice of civil engineering has become increasingly more technically complex in the past 30 years, yet the technical content of the undergraduate curriculum has not changed substantially during that period. How can more complex technical issues—resulting from decades of engineering research and technology-driven changes in professional practice—be added to an otherwise over-full undergraduate curriculum in the face of declining credit-hour requirements? In ASCE's view, it is not possible in the future.

Civil engineering body of knowledge

ASCE's Committee on Academic Prerequisites for Professional Practice (CAP³) has recently published the first edition of the “Civil Engineering Body of Knowledge for the 21st Century” (see www.asce.org/raisethebar). The BOK is being prepared to establish the knowledge, skills, and aptitudes necessary for graduates to effectively enter licensed practice. The BOK report proposes building upon the existing 11 ABET EC 2000 outcomes by adding four outcomes to those incorporated within existing accredited undergraduate curricula.

The proposed outcomes include additional technical engineering depth in one or more areas and additional breadth in the following areas: project management; finance; business and public policy and administration; and leadership. The additional breadth components might eventually be incorporated into undergraduate engineering curricula, leaving education beyond the bachelor's degree to consist of a flexible program of additional depth and breadth in engineering and professional practice topic areas.

For an engineer interested in a design-focused career, most of the education beyond the bachelor's level might be in technical areas. For an engineer whose focus is in engineering management or public works administration, post-undergraduate education might include some additional technical work but might primarily focus on management or public policy-related breadth topics. This acknowledges that not all practice is completely technical in nature, and some flexibility is necessary.

It is important to note that the NCEES-sponsored Engineering Licensure Qualifications Task Force (ELQTF) came to a similar conclusion regarding engineering education. The NCEES Licensure Qualifications Oversight Group is currently studying this recommendation offered by ELQTF. ASCE looks forward to the results of the group's deliberations.

The Model Law

Clearly, the ASCE proposal could affect the NCEES Model Law for licensure. Future Model Law changes required to implement additional education requirements for engineering licensure need not be complex. The Model Law presently requires a bachelor's degree from an EAC/ABET-accredited engineering program. Revised provisions might require a master's degree from an EAC/ABET-accredited graduate program, or, alternatively, a bachelor's degree from an EAC/ABET-accredited undergraduate program and a defined number of additional credits in upper-level undergraduate or graduate coursework in technical and/or professional-practice topic areas. This additional coursework could be obtained in a variety of ways, as indicated in the section below. The specific number of additional credits and the content of that additional coursework remain to be determined. ASCE understands that it will need to be defined across all engineering disciplines.

Engineering education providers of the future

ASCE's "raise the bar" initiative is intended to apply to all engineering graduates seeking licensure, not just those who choose to or who are

able to attend graduate school. It is anticipated that in the future those attaining bachelor's degrees in engineering will be able to acquire the additional required education in a variety of ways, including the increasing use of distance education from quality engineering institutions and the use of in-house education programs in firms, agencies, and technical societies able to provide educational experiences that are documented to be equivalent in content, rigor, learning, and assessment to current engineering education. (It is also ASCE's contention that a predominant number of those who teach engineers should be licensed—part of another active ASCE initiative.)

Other engineering disciplines

ASCE recognizes that engineering licensure in the United States is primarily generic and not discipline specific and that educational requirements for licensure generally apply equally to all disciplines. ASCE is not proposing discipline-specific licensure or that additional educational requirements apply only to civil engineers. ASCE does encourage other technical societies and the licensure community to consider additional educational needs that might appropriately apply to all engineering disciplines.

ASCE's leadership

ASCE is out-front in providing leadership in the engineering profession regarding the need for additional engineering education as a prerequisite for licensure in the future. We are under no illusions; we know that this is a controversial topic. Still, we believe that there is a compelling need in the future to "raise the bar" in engineering education in order to continue to adequately protect the public health, safety, and welfare.

ASCE also realizes that this is a long-term effort. We are looking ahead 15 to 20 years, to the long-term betterment of the profession. We fully intend to keep refining and communicating this message and to succeed in the long run.

A representative of our CAP³ Licensure Committee will be making a presentation on this initiative at each of the NCEES zone meetings this spring. We hope you will be able to attend and bring your questions and comments. If you would like to ask questions or make comments prior to the zone meetings, please contact me at PATNWG@aol.com or the chair of CAP³, Jeffrey S. Russell, Ph.D., P.E., at russell@engr.wisc.edu or 608-262-7244. We are interested in receiving your input.

*Patricia D. Galloway, P.E.
President, American Society of Civil Engineers*

The practice of civil engineering has become increasingly more technically complex in the past 30 years, yet the technical content of the undergraduate curriculum has not changed substantially during that period.



Robert "Bob" W. Fentress, L.S.
Chair, Law Enforcement
Committee

Pull your head out of the sand

Unlicensed practice happens

State boards grant licensure to individuals who have met the threshold of minimum competence for a particular profession. If we subscribe to this belief, we must view unlicensed practice as something that cannot be tolerated. To allow unlicensed individuals to practice puts the public at risk—denying the mandate given to licensing boards to protect the public—and decreases the value of professional licenses.

Over the 12 years that I have been associated with the Kentucky Board enforcement program and NCEES, I have found two facts to be rather troubling. In spite of the significant resources our board has committed to pursuing unlicensed practice, it continues to be a major area of concern. In an analysis of over ten years of enforcement actions, I found that 25% of the cases that led to some disciplinary action were in the area of unlicensed practice. However, in conversations with board members and staff from many states, I am often told the problem of unlicensed practice simply does not exist in their jurisdictions. While we as board members and staff may come from different areas of the country and may even speak with different accents, I think that based on the experiences of my board's enforcement division, I can safely assure you that unlicensed practice is a problem throughout the country. As with an alcohol or drug addiction, we must recognize that the problem of unlicensed practice exists before we can address it appropriately.

Some of our jurisdictions have been granted statutory authority to assess civil penalties against unlicensed practitioners. I am envious of those with this very effective tool. However, this authority must be used in a manner that the jurisdiction's legislature considers appropriate. If a board begins to impose excessive penalties—particularly when those moneys are returned to the board's operating budget—the board stands the risk of losing this power. I am not suggesting that boards not use this authority, but simply that they use it with caution and sound judgment. I would also caution that unlicensed practice cannot become a board's enforcement focus. It must be addressed along with concerns and issues within the licensed population as well.

Boards without the authority to impose civil penalties on the unlicensed practitioner must seek innovative ways of achieving this enforcement objective. For our board, this has come in the form of agreed injunctions. Our early experiences with the courts resulted in the judge granting the board an injunction prohibiting the unlicensed practice—an unsatisfactory result, to say the least. In one particular case, we were prosecuting an individual for a second offense, and the judge imposed a fine of \$100 per violation. I believe it was the smirk on his face that led the judge to then inform the respondent that his next offense would result in a substantial fine and maybe even jail time. The judge's comments led us to consider the idea of offering an agreed injunction in exchange for future predetermined sanctions. Under this scenario, we agree to no penalty for the current infraction (frankly, the judge is not going to give us a penalty anyway) and the individual does not have to appear in court. In exchange, we get a predetermined penalty for any future violations. This predetermined penalty is generally seven days in jail and a fine of \$1,000 for each future violation. Since initiating this idea, we have had to prosecute only one person for continuing unlicensed practice. In fact, the second offense was not for his unlicensed practice, but, rather, it was a contempt of court charge for violating the agreed injunction. I imagine his time in the local jail had a profound impact.

Is this harsh? You bet it is, but remember, unlicensed practitioners are in direct conflict with the licensing statutes we have been sworn to uphold. Unlicensed practitioners have not met the licensure benchmarks of education, experience, and examination, and they are a threat to the public health, safety, and welfare.

Every jurisdiction has its own peculiar set of circumstances. I encourage you to study your statutes, develop your plan, and then aggressively pursue unlicensed practice. It exists, and it can be stopped.

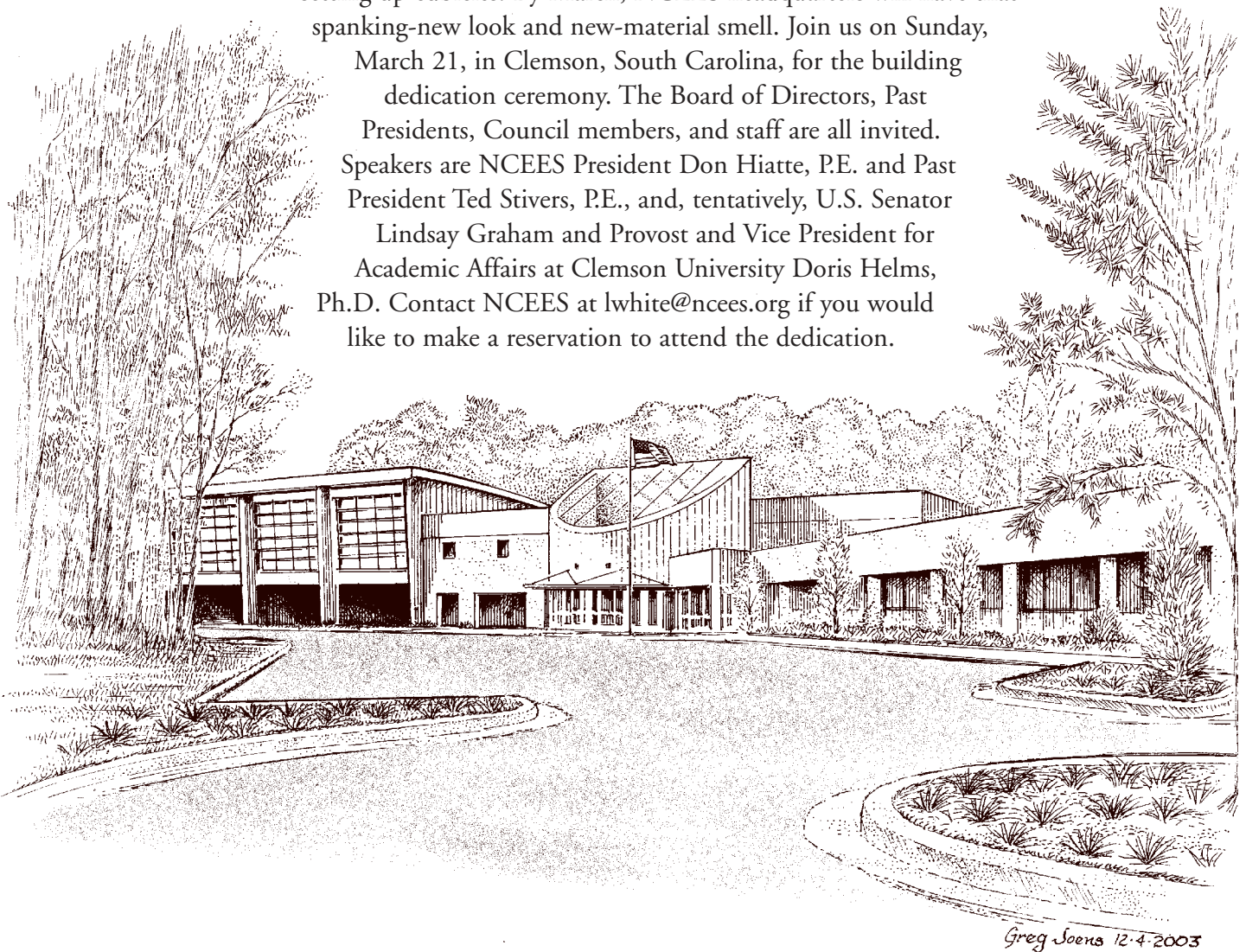
*Robert "Bob" W. Fentress, L.S.
Chair, Law Enforcement Committee
Assistant Director, Kentucky State Board of Licensure
for Professional Engineers and Land Surveyors*

You're invited

NCEES dedication ceremony will take place on March 21

The renovation and addition to Council headquarters is nearly complete. Construction crews are finishing walls, laying carpet, and setting up cubicles. By March, NCEES headquarters will have that spanking-new look and new-material smell. Join us on Sunday,

March 21, in Clemson, South Carolina, for the building dedication ceremony. The Board of Directors, Past Presidents, Council members, and staff are all invited. Speakers are NCEES President Don Hiatte, P.E. and Past President Ted Stivers, P.E., and, tentatively, U.S. Senator Lindsay Graham and Provost and Vice President for Academic Affairs at Clemson University Doris Helms, Ph.D. Contact NCEES at lwhite@ncees.org if you would like to make a reservation to attend the dedication.



On the

LIGHTER SIDE

I'll tell you exactly what to say



Larry Smith, P.E.
Chair, Committee on
Examinations for Professional
Engineers

We stated that we would quote the rest of the project once the scope had been established.

We heard nothing for over six months.

A physician apparently felt that his bills, which I had paid him over the years, were sufficient to pay for an addition to his building. His practice manager called and asked me for a quote for surveying, site design, zoning assistance, and the usual gamut from soup to nuts. Not knowing the scope of the ultimate project, which was to be determined after the architect did the design, we sent a proposal for the survey work and plan and a radius map. We stated that we would quote the rest of the project once the scope had been established. We heard nothing for over six months.

The phone rang, and it was the doctor's practice manager. They wanted to go forward. They needed to file everything the next day with the zoning officer. They needed a site plan, radius map, and abutter's list. I told him that it must be a bad connection—I thought he had said he needed the stuff for the next day. He said that I had heard him right. I mentioned that for six months they had sat on their hands, and now I was expected to drop everything. I also told them that if I dropped everything else, and put everyone on it, we still couldn't get it done. We lacked the basic site survey. He said the last time they went to zoning, they had someone get everything together in one day. I told him to get that person and have them do it. God bless whoever it was.

Fast forward three months. The architect calls. He wanted to know when the survey could be emailed to him. I told him that no one had ordered the survey, so it wasn't done. I also told him that our lead time was six to eight weeks. He asked me to call the practice manager and discuss it. I declined. We were busy, and I wasn't going to chase someone to sign a proposal that they had now had for over nine months. I pointed out that they could have had a kid in that time. The next call was from the practice manager. He didn't understand why they needed a survey. The guy who did their site plan for zoning had drawn a plan, and it had dimensions on it. Why should they pay my firm for the same thing? I told him to use what they had and not to bother me. I made a note to start asking around for a referral for another doctor. The architect called me and said the client was signing the proposal and—would I please schedule them as soon as possible? A non-registered retired draftsman had prepared the

previous material. He had used a plat map as his base map. They needed something real.

We did the survey about six weeks later and sent it to the architect. The bill was sent to the practice manager. Nothing happened for a while. I called the practice manager and reminded him that in the doctor's office was a sign that stated, "All services must be paid for in full at the time of the visit." I asked, "Where's my payment?" He had a problem with the bill. He didn't understand why they had to pay for something twice. He already had a plan with dimensions. I told him he was also going to have an awfully sore head. They had ordered the survey, signed the proposal, and now they were going to pay for it. I called my doctor, direct, and told him to send me the cheque. I also told him exactly what I thought of his practice manager. The cheque did arrive, but it took about a month.

Two months later, the architect calls. He wanted to let me know that they needed the final site plan by the end of the week. I asked, "What site plan?" No one had asked for a proposal, I hadn't sent one, and I wasn't too sure that I wanted to send one. The architect asked me to please send a proposal to the practice manager. I told him that I could probably do that by the end of the week. The proposal was sent, and the practice manager called. He didn't understand why he needed a site plan from us when he already had one. I told him to go talk to his architect and not to bother me. I wasn't soliciting the work—the architect was requesting that I do it. He should argue with him. The proposal came back signed.

We inserted the architect's site drawing onto our survey, and we had parking spaces in the street, over the property line, and over a fiber optic cable junction box that sat in an easement on the property. The doctors had signed a leasing agreement with a communications company. This box served about four different towns. It wasn't going to be moved. After we rearranged the parking to fit on the site and meet the town's parking ordinance for setbacks and screening, they had lost twelve spaces. We did the parking calculations for the building and found out that the original plan was short fourteen spaces from what was required. They were now down a total of twenty-six spaces. Not to worry—they had received the

original zoning variance for six spaces based on the original "sketch" they had done before. Back to zoning they go.

Just before we were supposed to go to zoning, a major problem arose. The practice manager was supposed to go to the doctor's condo in Florida that week. He wanted to put the zoning off a month, so he could be there. Only problem was that I was going to Hawaii on my vacation the week of the following month's zoning hearing. The practice manager asked me if I would reschedule my vacation. I told him to reschedule his, if he felt it was necessary, but we really didn't need him there. I've only been doing this for over thirty-five years. The lawyer called and said we would be going forward as scheduled. The doctor would attend in the practice manager's place. The day before the zoning hearing, the practice manager called from Florida. He would give me his cell phone number. I was to call him in Florida during the zoning meeting. As questions were asked, I was to relay them to him. He would then tell me what to say. I told him that we weren't going to do that. I was going to skip the meeting. He could make that arrangement with the doctor or he could hire a monkey to stand up there and hold the cell phone up to the zoning board. They didn't need me to do that. The lawyer called and told me to please show up and just disregard the practice manager. He and I would handle it. I reluctantly agreed.

The next night we are sitting in the town hall when the doctor's beeper starts vibrating. He calls the answering service to find out what the emergency was. It was the practice manager. He wanted the doctor to call him in Florida immediately. I told the doctor that he should wait until after we testified and got a decision. Shortly

thereafter we testified. The doctor's beeper started vibrating again. The doctor was torn. If it was an emergency, he should call the service immediately. If it was the practice manager, he shouldn't. He wasn't on call that night. But he worried that one of his patients might have been rushed to the hospital and the on-call doctor was trying to reach him to ask him to go over there immediately. He decided to wait until we were through to call the service. We were approved shortly thereafter, and the doctor went outside into the hallway and called. It was the practice manager. The doctor then called him and asked him what was the big problem. The practice manager said that he had thought of something that was very important and that he should put me on the line so he could tell me what it was and I could tell the zoning board this important bit of information. The doctor told him that somehow we had managed to get approved without this "nugget of wisdom." He also told him that he did not appreciate being paged while he was part of the group that was testifying. He told him of the ethical and moral dilemma it had created for him. The practice manager told him that if we had not been approved, this information would have been vital. After we had relocated to a nearby eating and drinking establishment, the doctor told me to send my bill directly to him. He would authorize the payment without it going through the practice manager. He said he now understood my complaints about the guy. However, he did say that he was a very good practice manager. Just a lousy engineer and surveyor.

*Larry Smith, P.E.
Chair, Committee on Examinations
for Professional Engineers*

The practice manager said that he had thought of something that was very important and that he should put me on the line so he could tell me what it was and I could tell the zoning board this important bit of information. The doctor told him that somehow we had managed to get approved without this "nugget of wisdom."

NEWS

DELAWARE

◆ Gayle Melvin replaces Celene Walton as administrative specialist.

GUAM

◆ Hermegenildo C. Moguel is a new appointee to the board.

HAWAII

◆ The board has a new address: 335 Merchant Street, Honolulu, HI 96813. The new fax number is 808-586-2689, and the new Web address is www.hawaii.gov/dcca/pvl.

IDAHO

◆ James H. Milligan is a member of the board. In the December issue, we indicated in error that his term had expired.

INDIANA LS

◆ Gloria Keating's title has been changed from board secretary to board director.

INDIANA PE

◆ Gloria Keating replaces Gerald H. Quigley as board director.

KENTUCKY

◆ Dennis D. Smith and J. Steven Gardner are appointees to the board. The terms of Al Matherly and Aubrey May have expired. I. David Sanders is the board chair.

**MARYLAND
LS and PE**

◆ Sally Wingo is no longer with the Maryland LS and PE Boards. Pam Edwards will be the acting executive director until a replacement is appointed.

MICHIGAN LS

◆ William L. Karr and Daniel Redstone are appointees to the board. The terms of Rainy Hamilton Jr. and Robert A. Goodreau have expired.

MICHIGAN PE

◆ Ronald Hausmann is an appointee to the board. The term of Abe A. Munfakh has expired.

MONTANA

◆ Todd Boucher's title is now executive officer. The board's fax number is 406-841-2309.

NORTH CAROLINA

◆ Caroline Guzniczak is a new appointee to the board. The term of Frank Tyndall has expired.

OHIO

◆ After several years of cooperative efforts between Ohio's engineering and surveying societies, HB 3223 and SB 150 have been introduced and are receiving legislative hearings. The bills would establish mandatory continuing professional development for licensure renewals in 2007. The legislation very closely follows the NCEES Model Rules.

OREGON

◆ Mari Lopez replaces Edward Graham as executive secretary.

PUERTO RICO

◆ Leyda Batiz replaces Marcos Velez Green as assistant secretary. .

RHODE ISLAND PE

◆ L. Robert Smith is the board chair.

TENNESSEE PE

◆ Robert G. Gampbell, Dennis Henderson, James O. Hastings, and David Schuerman are new appointees to the board. The terms of Melvin Downs and Granville Taylor have expired.

TEXAS LS

◆ The term of Jerry Goodson has expired. W.C. Wilson Jr. and Kelley Neumann were reappointed to the board.

TEXAS PE

◆ James R. Nichols is the board chair.

EVENTS

DATE	EVENT	LOCATION
February 20–21	.BOD Meeting	.Santa Fe, NM
March 21	.NCEES Building Dedication	.Clemson, SC
April 1–3	.Western Zone Meeting	.Las Vegas, NV
April 9	.Office Closed	.Holiday
April 16–17	.Exam Administration	
April 22–24	.Northeast Zone Meeting	.Portland, ME
May 13–15	.Southern Zone Meeting	.Asheville, NC
May 19	.BOD Meeting	.St. Louis, MO
May 20–22	.Central Zone Meeting	.St. Louis, MO

Send letters to *Licensure Exchange* editor at NCEES, P.O. Box 1686, Clemson, SC 29633 or lwiliam@ncees.org

Please include your name and state of residence on the letter. Letters may be edited for clarity, brevity, and readability.

NCEES OPERATING SUMMARY For the Period Ended December 31, 2003

	<u>Actuals</u> <u>Year-to-date</u>	<u>Budget</u> <u>Year-to-date</u>	<u>Budget</u> <u>Variance</u>	<u>2003–2004</u> <u>Total Budget</u>
INCOME				
Member Board Revenue	\$ 96,548	\$ 101,450	–4.83%	\$ 669,300
Examination Revenue	68,080	70,000	–2.74%	5,614,830
Study Materials Revenue	89,712	179,030	–49.89%	1,034,850
Records Revenue	274,535	313,089	–12.31%	1,252,365
ELSES Revenue	<u>31,790</u>	<u>56,100</u>	<u>–43.33%</u>	<u>1,694,000</u>
Total Income	\$ 560,665	\$ 719,669	–22.09%	\$ 10,265,345
EXPENSES				
Member Board Expenses	\$ 315,423	\$ 394,649	–20.08%	\$ 1,907,662
Examination Expenses	1,128,896	1,282,556	–11.98%	5,525,598
Study Materials Expenses	106,805	160,390	–33.41%	686,666
Records Expenses	157,762	169,673	–7.02%	698,698
ELSES Expenses	<u>298,283</u>	<u>427,586</u>	<u>–30.24%</u>	<u>1,679,592</u>
Total Expense	\$ 2,007,169	\$ 2,434,854	–17.57%	\$ 10,498,216
NET OPERATING INCOME (DEFICIT)	\$ (1,446,504)	\$ (1,715,185)	–15.66%	\$ (232,871)

**BOARD of DIRECTORS/
OFFICERS**

Donald L. Hiatte, P.E.
President
Jefferson City, Missouri

Jon D. Nelson, P.E.
President-Elect
Tulsa, Oklahoma

Robert C. Krebs, PE., L.S.
Past President
South Hero, Vermont

Martin A. Pedersen, L.S.
Treasurer
Rawlins, Wyoming

Gene Corley, Ph.D., PE., S.E.
Vice President Central Zone
Glenview, Illinois

Louis A. Raimondi, PE., L.S.
Vice President Northeast Zone
Mahwah, New Jersey

James T. McCarter, PE.
Vice President Southern Zone
Greenville, South Carolina

Ken R. White, Ph.D., PE.
Vice President Western Zone
Las Cruces, New Mexico

Betsy Browne
Executive Director
Clemson, South Carolina

Licensure

EXCHANGE

PUBLISHED BY:

National Council of Examiners
for Engineering and Surveying

Betsy Browne,
Executive Director and Publisher

Ashley Cheney,
Managing Editor

Lessie Williams,
Editor

Ragenia Thompson,
Graphics Coordinator

POSTAL NOTICE

Licensure Exchange is published
bimonthly by the National
Council of Examiners for
Engineering and Surveying,
280 Seneca Creek Road,
Seneca, SC 29678-9214.

Periodicals postage paid at
Clemson, SC 29633.

Postmaster:
Send address changes to
Licensure Exchange
P.O. Box 1686
Clemson, SC 29633-1686
ISSN NO. 1093 541X
Volume 8, Issue 1

Deserve your license ... (continued from page 5)

pressures. License fees do not necessarily go directly back to a board; Minnesota's license fees went to a general fund.

An informed public best achieves enforcement of licensing laws. Too many individuals are practicing engineering design without a license. Technology—from simplified CAD programs to boilerplate, off-the-shelf design packages—makes it easy for unlicensed professionals to perform design. Hiring investigators to handle cases is one thing; an educated public regarding licensing laws casts a wider net of compliance. Unlicensed practice is a major threat to the design profession and public safety. Code officials are the single greatest resource to curb problems of noncompliance.

There is a talent crisis in the engineering profession. Most high school students shy away from engineering in general, creating vast shortages of engineering talent to begin with. Compounding the problem is the fact that many universities in Minnesota would rather produce engineers who would invent the next revolutionary heart valve, supercomputer, or prosthetic limb, not grovel in something as mundane as building design.

Fire protection engineering is grabbing for pieces of a shrinking and ever-changing pie.

Where does a fire protection engineer fit in at the design table? Is the fire protection engineer relegated to being a code consultant or called in special situations only? What other services do fire protection engineers offer to increase their value? The public at large or the licensing board does not understand the role of a fire protection engineer in the design process. It is not the public's

fault; it is the profession's fault for not effectively articulating who we are. Boards need help from the profession to sort it all out. Otherwise, the public will do it for the profession.

The issues facing fire protection are only a microcosm of broader underlying trends within the design professional's sphere. Being licensed means meeting a certain level of competency that is demonstrated through education, testing, and experience. As design professionals, we work very hard to obtain and maintain our licenses. However, obtaining a license is just the first step, because in the long run its true worth and value are based upon consistent ethical conduct and relentlessly finding ways to solve the needs and challenges of the public. When we look at our license or that plaque on the wall, we should reflect upon where the design professional fits into the bigger scheme of things. We must deserve our licenses; Winston Churchill once said, "One must 'deserve' victory." A design professional must deserve receiving the true value of the professional license that is granted, which comes as a result of hard work, persistence, integrity, education, insight, and preparation. Success comes to those deserve it.

*Michael A. O'Hara, P.E.
Former member and chair,
Minnesota Board of Architecture,
Engineering, Land Surveying, Geoscience,
and Interior Design*

*Reprinted with permission from the Winter 2002 issue of
Fire Protection Engineering magazine*



National Council of Examiners
for Engineering and Surveying
P.O. Box 1686
Clemson, SC 29633-1686

(864) 654-6824

Fax (864) 654-6033

www.ncees.org

PERIODICALS
POSTAGE PAID
AT CLEMSON,
SC 29633