THE LOUISIANA CIVIL ENGINEER

ACADIANA BRANCH • BATON ROUGE BRANCH
NEW ORLEANS BRANCH • SHREVEPORT BRANCH
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Charles L. Eustis, PE
Section President 2002-2003

American Society of Civil Engineers
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Building a Better World

INSIDE:
Section's newly elected leadership

FEATURE:
Breaking the mold on vertical lift bridges

FUTURE:
2003 Annual Spring Meeting and Conference in Baton Rouge March 19-21, 2003

2003 Deep South Conference of ASCE Student Chapters in New Orleans March 27-29, 2003

THE LOUISIANA CIVIL ENGINEER

CONTENTS

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President's Message

Charles L. Eustis, PE

In my estimate, the Section Board of Directors under Mark Snow's leadership during this past administrative year was active and successful. Indications are that we, the new Board, will continue to seek to meaningfully build on the accomplishments of the previous one. Now that the ASCE 150th year anniversary celebration is coming to an end, it is time we continue our journey as we strive to make the end of the next century and half one to celebrate equally impressive civil engineering achievements.

A website for the Section was reestablished and a webmaster has been retained to support it. This is being managed by Mark Snow and Pamela Miller. The Board will continue to seek other effective ways to serve Section members as we proceed on our individual journeys seeking new opportunities.

I believe that the Section's strength is founded principally on the vitality and the successful member-supported activities in the branches. For instance, the 2002 Section Annual Spring Meeting and Conference, hosted by the Acadiana Branch, was very well attended, and the continuing professional development sessions were interesting and beneficial. Congratulations to Glenn McCall and the several organizers for the dedication and care they exercised in planning and executing this meaningful yet entertaining event.

A session that particularly caught my attention was a discussion of the underlying principles and subtleties of the application of highway curve specifications. They were surprisingly elegant to those of us who attended and who are not regularly involved in highway geometric design. This presentation was very informative, logically following the details of the design process and explaining its practical aspects. It presented the concepts and the details and complexity of the analysis, particularly to the engineer participants like me who do not practice in this specialty yet have had elementary exposure to the basic concepts during our college days.

The Baton Rouge Branch will host the 2003 Section Annual Spring Meeting and Conference March 19 - 21 at the Sheraton Hotel in Baton Rouge. I look forward to this conference as another meaningful professional development opportunity. Many times informal discussion groups of engineers during the breaks at these conferences are most enlightening and valuable.

As you may be aware, the New Orleans Branch has developed strong geotechnical and structural technical committees, that independently develop and support regular technical seminars in the Branch for their constituents. In July 2002, a group of interested structural engineers met in Baton Rouge to discuss the possible formation of a nationally affiliated structural engineers group that is not part of the ASCE. Om P. Dixit, PE, of the New Orleans Branch attended this meeting and expressed the opinion that the group should seriously consider forming under the ASCE Structural Engineering Institute or under a Baton Rouge Branch structural technical committee to pursue their goals. Some at the gathering expressed opposition to organizing under the auspices of the ASCE. In my opinion, organizationally uniting civil engineers and not splintering them is in the best interest of civil engineers and the public and it is certainly in the best interest for the overall engineering profession.

The Shreveport Branch maintains a healthy level of activity interacting regularly with the Louisiana Tech ASCE Student Chapter and providing leadership in the Louisiana Section. Their annual golf tournament and hamburger barbecue provide vehicles to bring their members together cultivating both social and professional ties. The Branch's core of active members demonstrate unusually good comradeship and its elected leadership is very effective in supporting both Branch and Section-level activities.

The twelfth annual Louisiana Civil Engineering Conference and Show sponsored by the New Orleans Branch in association with the Louisiana Chapter of the American Concrete Institute is the largest conference of its kind in the Section. This year the attendance and the topics in its 3 concurrent sessions were outstanding. Congratulations to Reda Bakeer, PE, Christopher G. Humphreys, PE, and all those who worked with them and contributed to making this conference so successful.

The 2002-2003 national President of the ASCE is Section member Thomas L. Jackson, PE. He is a past president of the Louisiana Section and a resident in the New Orleans Branch. The Section leadership plans to offer its support to Tom in his endeavor to lead the Society.

The Section will continue to participate in the ongoing State Public Affairs Grants program of the ASCE. For several years, the Section has applied for and been awarded funds through this program for several worthwhile branch-sponsored programs, such as Building Big, advertising spots on radio and television, fairs for students, and other worthwhile projects.

The Section invests some of its excess income to supplement the activities of the branches that foster improved public relations through the State Public Affairs Grants program funds. The projects proposed by the branches that are either partially or not funded by the Grants program are funded by Section. These funds go to the branches for these grass root endeavors to inform the public about civil engineers and support scholarship. It is important to get the youth and even the adults to realize that there are engineers other than those who operate trains on the railroads as a majority of the public tends to believe, according to previous polls. They need to know that there are engineers who work to create wealth and develop tangible structures for the betterment of the public and in doing so they hold the welfare of the public in highest regard as it is related to the work.

I am humbly honored to represent the Section during a gala event on November 4, 2002 planned to celebrate the culmination of the ASCE 150th anniversary celebration. It is in Washington, D.C. and in conjunction with the ASCE Civil Engineering Conference and Exposition. The energetic leadership of the ASCE 150th anniversary events in the Section by Mark Snow, as the Section President, and Miles B. Bingham, PE, as the Section Champion for the 150th year anniversary commemorative year, is greatly appreciated. The new lapel pin in the image of the Section logo that appears on the front page of this journal and doubloons minted with the ASCE 150th anniversary logo and the ASCE national logo on opposite sides were well received. They were distributed to Section members and put to other uses through the branches.

I believe ASCE policy statement 465 and highway infrastructure will be two of the major issues to be debated this year and for many years to come. Policy statement 465 supports the master's degree or equivalent as first professional degree for civil engineers. Support for this policy statement by the Section membership has seemingly wavered. In light of the trend toward reduced semester hours required for a bachelor's degree, an added master's degree curriculum or the equivalent semester hours to be required would compensate for the necessary civil engineering education.

It appears the Louisiana Board of Regents for University Systems is seeking 4 years at 15 hours per semester or 120 credit hours as the desired level for all bachelor's degree curricula. Having a practical engineering program for a master of civil engineering degree could serve to retain some of the content that is removed as a result of implementing the 120-hour curriculum. It would possibly allow courses in design and business skills and other topics that would aid many graduates to better serve the public and succeed during the formative years of their professional careers.

An equivalent method proposed and being discussed to obtain the equivalent (30) hours of the master's degree allows correspondence courses. Such could be obtained through the offerings of multiple universities. This could supplement an engineer's internship while gaining working experience, but it does not, as the

(Continued on Page 9)

Breaking the mold on vertical lift bridges

By Tony M. Ducote, PE

Introduction

When the question was asked, *Why do all of our vertical lift bridges have steel towers as opposed to concrete?* no one had a good answer. Only a feeble excuse, "That's how we've always done it," was offered. With that, the spark of curiosity for pursuing the design and construction of a vertical lift bridge with concrete towers soon became unshakable.

The decade of the 1990s was an era when labor costs increased at an incredibly rapid pace and the labor in bridge fabrication and construction industry was not immune to this trend. Future maintenance cost and the notion of life-cycle cost analysis became a more widespread consideration in transportation infrastructure discussions and decisions. In addition, we were in pursuit of a vertical lift bridge to carry state route LA 14 over Bayou Carlin with an aesthetically pleasing and bold tower structure that would in any event, tower over the marshes of Vermilion Parish more than 100 feet. Concrete towers provided the opportunity to build such a structure that would impose on the skyline clean straight lines of bold proportions with a modern appearance as shown in Figures 1(a) and 1(b). It is believed that vertical lift bridges with concrete towers of the type discussed herein will pay rewards in all the issues mentioned.

The focus herein is primarily on the issues previously mentioned and how we in the Louisiana Department of Transportation and Development implemented a change in a long-standing design and construction philosophy as part of the Bayou Carlin bridge replacement project. Interesting aspects of this project's innovative design to be discussed will include a unique detour bridge and the many challenges encountered during construction that was so unique compared to our past experience. By the completion of the construction phase, we had learned the hard way several reasons why so few have the courage to venture into the uncharted waters of innovation, yet I believe that we also reaped the rewards of hard-earned experience.

Background and planning

Initial planning and environmental work for replacement of the old vertical lift bridge over Bayou Carlin in the town of Delcambre actually began in the 1970s. The existing bridge was built in 1936 and by the end of 1999, at the time of its demolition, it had a sufficiency rating of 2 on a scale of 0 to 100. This provides a sense of the degree of structural deficiency and functional obsolescence considering that by definition structural deficiency and functional obsolescence occur at a sufficiency rating of 50. Though the bridge portion of the project could have been justified and developed independently as a bridge replacement project, the planning for the new bridge was incorporated into a capacity improvement of state route LA 14 between Abbeville and Delcambre. Over $30 million was spent on improving this segment of state route LA 14 resulting in an implementation schedule of the construction project dictated by funding constraints.

In the early planning stages for a bridge project such as this, the most appropriate bridge type and the length of the *navigation span* over the navigation channel is determined based on many factors that take into account site conditions; cultural and natural environmental factors; and the regulatory, social, financial and political constraints. In general, preference is given to building high-level fixed bridges over navigable waterways in lieu of low-level movable bridges. Though the former usually have a higher initial cost and greater impact on the environment, they are significantly more economical in a life-cycle cost analysis. This is because low-level movable bridges with lower initial costs and fewer impacts on the environment have higher operations and maintenance costs that accumulate over the life span of a bridge. They also have a greater risk of significant damage from marine collision and present more difficulty for navigation because they inherently have shorter navigation spans. When in the open position for navigation, they also cause travel delay to highway users that also has an accumulative cost over the life span of a bridge. The predominant impact of a high-level fixed bridge at the Bayou Carlin site would have been its long approach structures passing over much of the development in the heart of the Delcambre located near Bayou Carlin on both banks. This would force the costly relocation or the loss of a large number of businesses. This was deemed undesirable and, therefore, a low-level vertical lift bridge with essentially an at-grade approach was selected for the replacement bridge.

Typical in the replacement of most bridges, consideration is first given to building the replacement bridge on a new improved alignment allowing the economical use of the existing bridge to serve traffic during construction and avoiding the cost of a detour bridge. Since the Bayou Carlin bridge site including its approaches on this portion of state route LA 14 fall in a straight section and in the downtown area of Delcambre, the introduction of the required approach geometry for a permanent offset alignment for a new bridge was ruled out. The construction of the replacement bridge on the same alignment necessitated the construction of a temporary detour bridge on an offset alignment that is incidentally shown in Figures 5(c) and 9(a). The temporary detour bridge would have to be a low-level movable bridge that would not interfere with the free flow of marine traffic or the construction of the new bridge. This unique detour bridge is discussed in more detail herein.

Design considerations

The typical section of the new bridge matches that of the approach roadway and consists of a 5-lane section with 10' shoulders for a total width of 82'. The navigation span for a vertical lift bridge is the *lift span* and it is 100' in length to accommodate an 80' future navigation channel. The future channel is under the administrative responsibility of the U.S. Army Corps of Engineers who has been unsuccessful in funding the project to date. Although this lift span is nowhere near the largest in the Louisiana DOTD inventory, the new 82' by 100' lift span dwarfs the one it replaces by a factor of over 5 in its lift span deck area. The movement of the lift span provides for 73' of vertical clearance above the mean annual high water elevation of the channel in the open-for-navigation position. In the closed position, there is only 5 to 6 feet of clearance accommodating only the smallest of the recreational vessels.

Tower selection

Until the construction of the Bayou Carlin bridge, all vertical lift bridge tower support systems in Louisiana were designed and constructed using fabricated structural steel of riveted or, welded and bolted elements. Depending on the lift span length, there were two vertical lift bridge tower configurations used. For short-span vertical lift bridges — usually less than 100 feet in length — the towers consisted of two columns on each side of the channel. They were connected with moment connections at the top by framing beams spanning across the channel with a lateral system forming a three dimensional steel frame as shown in Figure 2. The movement of the lift span may be powered by single or dual power sources. For long-span vertical lift bridges — generally greater than 100 feet in length — independent, four-column towers forming a vertical truss on each side of the channel as shown in Figure 3 were used to independently support the lift span reaction, counterweight and machinery. The movement of the lift span was powered by two independent drive sources electrically connected for synchronization.

For a vertical lift bridge steel tower design, the 100' lift span Bayou Carlin bridge falls on the empirical boundary between what is considered a

Tony M. Ducote, PE, a Bridge Engineer Administrator with the Louisiana DOTD in Baton Rouge, received his BS degree in Civil Engineering from LSU in 1980 and has 22 years experience in government.

Figure 1. (a) Vertical lift bridge near completion with span partially raised.

Figure 1. (b) Vertical lift bridge near completion with span partially raised.

long-span or a short-span vertical lift bridge. On this basis, it could be designed using either tower configuration. In any event, it was decided that independent towers were best suited for the established goals since the design would lend itself to a cleaner, more aesthetically pleasing appearance and an efficient concrete tower structure. The decision to construct the towers of cast-in-place concrete further improved the feasibility and influenced the choice of independent towers and machinery platforms.

Lift span selection

There are two types of lift span framing configurations that are typical for vertical lift bridges. One consists of two main floor beams on each end of the lift span that also serve as transverse or end *lift girders* with their ends attached to — and supported by — the cables. Full span-length longitudinal *lift span stringers* frame into them and support a deck. The other configuration consists of two main girders on either side of the lift span that also serve as longitudinal lift girders. They support a floor system with transverse floor beams that frame into them and support longitudinal stringers that support a deck. Both configurations have advantages and disadvantages depending on the length and width of the lift span. For the Bayou Carlin bridge, the former configuration was selected because it provides the most vertical clearance under the lift span in the closed position, a marginally more efficient structural system by weight (material) and in fabrication costs, and it presents a slimmer profile that is considered aesthetically more pleasing when viewed in the side elevation.

Another significant consideration in the design of a lift span is the choice of its deck. Considering that the weight (mass) of any movable span is a design economy issue particularly concerning the power requirements to move it and the mechanical equipment needed to suspend it, the conventional practice is to minimize the weight of the lift span with the use of a steel grid deck or an orthothropic steel plate system — each with their own unique, inherent problems. A decision was made to use a minimum thickness, conventionally reinforced normal weight concrete deck to avoid these problems. The lift span stringers were spaced so that a 7" conventional reinforced concrete slab was required. However, with little or no probability of winter icing and the need for winter salting at this location, the standard 2" top reinforcing steel cover was reduced to 1½". The ½" reduction in slab thickness reduced the weight of the lift span by more than 50,000 pounds.

Another opportunity for change in the steel components of the lift span arose out of a discussion on the protective coating of the steel. Serious consideration was given to the use of hot dip galvanizing in lieu of a conventional three-coat waterborne paint system. This alternative was eventually deemed cost prohibitive for 2 reasons. First, the transportation and handling costs to and from the dipping facility were too great. Second, there were increases in costs associated with the risks of unacceptable flange warping

Figure 2. Example of a typical short-span vertical lift bridge with structural steel towers that are frame connected.

Figure 3. Example of a long-span vertical lift bridge with independent structural steel towers.

Figure 4. View of construction site showing the railroad, the replacement and the detour bridges.

Figure 5. (a) Temporary bascule bridge serving as the detour bridge in the closed position.

and distortions that may occur as a result of the dipping process required for the size of girders being used.

Tower design

The actual design analysis for the towers was a 3-dimensional frame analysis modeled on the STADD structural design and analysis software. The 4'-6" × 3'-6" rectangular columns used are conventionally reinforced and have 6-inch corner chamfers. The machinery platforms are also of conventional reinforced concrete elements. They were designed as double tee beams using a high percentage of compression reinforcement to counter the effects of long-term flexural creep in the spans of 100' or more in length.

In light of the most recent hurricane events in Louisiana, particularly hurricane Lili moving almost directly over the Delcambre area, it is with some relief that the project was given a distinctive design consideration. Due to the height of the towers and the proximity of the location of the Bayou Carlin bridge to the Gulf of Mexico, the wind load that was provided in the applicable bridge specifications adopted by the American Association of State Highway and Transportation Officials is 100 mph resulting in a 50 psf of wind pressure. It was modified to be in accordance with the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminairs and Traffic Signals* [Ref. 1]. It is a specification that is also considered in the design of tall buildings and it accounts for the increase in the design wind velocity as a function of the height of the structure above the ground and it includes a gust factor of 1.3. For the Bayou Carlin bridge, the wind loads were modified by a factor of 1.37 — the coefficient for height above the ground (Ch) — that converts to a design wind speed of 125 mph or a pressure of 68 psf and gusts to 163 mph. Although not in this exact form, similar design wind load provisions have since been incorporated into the most recently developing design philosophy that is embodied in the AASHTO *Load and Resistance Factor Design (LRFD) Specifications* [Ref. 2].

Design specifications

The Bayou Carlin bridge is one of the last movable bridges in Louisiana to be designed using the 1988 AASHTO *Standard Specifications for Movable Highway Bridges* [Ref. 3] as amended through 1995. In 2000, the AASHTO adopted the 1st edition of its *LRFD Movable Highway Bridge Design Specifications* [Ref. 4] that are now in use. These new specifications were rewritten under the NCHRP Project No. 12-44 with Modjeski and Masters, Inc. as the principal investigator. It is a comprehensive redevelopment of these LRFD specifications in principle that was thought to have been well overdue. The rationale of this specification follows that of the AASHTO Load and Resistance Factor Design (LRFD) Specifications for fixed bridge design and there are many references to

(Continued on Page 25)

Figure 5. (b) Temporary bascule bridge serving as the detour bridge in the open position.

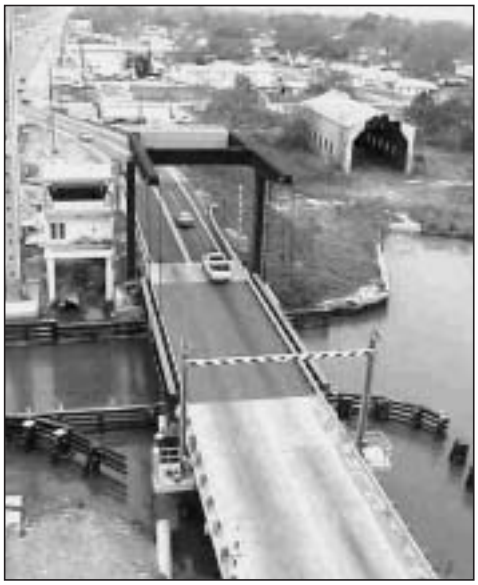


Figure 5. (c) Temporary bascule bridge serving as the detour bridge showing the detour alignment.

Figure 6. View of the railroad bridge on the construction site in the open position.

News from the Branches

ACADIANA

By Larry A. Cramer, PE, President

After the summer layoff, the Branch kicked off the 2002-2003 administrative year with a very successful September Branch meeting. Pamela G. Miller, PE, President-Elect of the Section, installed the new Branch officers who are:

- Larry A. Cramer, PE, President
- John E. Bosch, PE, President-Elect
- Kimberly D. Landry, EI, Vice President
- Dax A. Douet, PE, Treasurer
- Jeffrey L. Duplantis, PE, Secretary
- Glenn McCall, PE, Past President

Past-President Glenn McCall gave his farewell speech and handed over the gavel passing the office of the presidency to Larry Cramer.

On behalf of the Branch, I wish to thank Glenn McCall for a job well done leading the Board last year and coordinating the very successful Section Annual Spring Meeting and Conference hosted by the Branch. I began my term by challenging the Branch community to get more involved in its activities. This includes not just attending the monthly branch meetings, but also participating in student chapter functions, ASCE-coordinated community events, or volunteering to serve as a committee chair.

I came away from the 2002 Section Annual Meeting and Awards Banquet in New Orleans with great pride and excitement. All four of the 2002 State Professional Awards acknowledging outstanding civil engineers were awarded to members of the Branch. They are

- Glenn McCall, PE, Outstanding Young Civil Engineer
- Ehab A. Meselhe, PE, Outstanding Government Civil Engineer
- Mark B. Dubroc, PE, Outstanding Civil Engineer and
- A.J. Szabo, PE, Lifetime Achievement Award

In addition, a very special and moving presentation was made in honor of Jacqueline Dubroc. A special thanks to the New Orleans Branch, the host of the Section's Annual Meeting, for a wonderful awards banquet.

The Branch has set several goals for the year. They are

- assisting the Lafayette Chapter of the Louisiana Engineering Society with hosting the Annual Louisiana Joint Engineering Societies Conference
- participating in the 2003 Career Connections Expo for 10th Graders,
- donating additional civil engineering-related schoolbooks to elementary schools, and
- continuing to pique the public awareness of civil engineers in the community.

The Board of Directors has decided to continue two worthwhile community-based activities. In an effort to promote civil engineering to the youth in our local communities, the Board will continue to air the television commercial

(Continued on Page 9)

Larry A. Cramer

John E. Bosch

Kimberly D. Landry

Dax A. Douet

Jeffrey L. Duplantis

Glenn McCall

Rasoul Nazermalek

SHREVEPORT

By Joe E. (Butch) Ford, PE, President

The members of the Branch Board of Directors for the 2002-2003 administrative year are:

- Joe E. "Butch" Ford, Jr., PE, President
- C. Eric Hudson, PE, President-Elect
- Lisa Nichols, EI, Secretary
- Kirt M. Nixon, EI, Treasurer
- Rasoul Nazermalek, PE, Past President

Kurt Nixon and I will attend the ASCE Civil Engineering Conference and Exposition in Washington, DC, scheduled for November 3-7, 2002. The Conference will feature the special event — the formal ASCE 150th Anniversary Celebration. It is our plan to share our experiences during the Conference with the Branch membership following our return from Washington.

The Branch membership meeting planned for December will be a joint meeting with the Shreveport Chapter of the Louisiana Engineering Society. It will feature a session titled *Professional Ethics* that Bobby E. Price, PE, has agreed to present.

The Branch sponsored the annual Burger Burn at Louisiana Tech University where 25 entering freshman civil engineering students were in attendance. On behalf of the Branch, I wish to especially thank G. Walter Carpenter, Jr., PE, for speaking to this group.

Our speaker during the September Branch membership meeting was Kieth Hightower, the Mayor of the City of Shreveport. The Mayor informed us about the City's upcoming projects. The speaker during the October Branch membership meeting was Anthony Goss with Industrial Fabrics. Anthony discussed the application of Glasgrid in asphalt overlay projects.

Joe E. "Butch" Ford, Jr.

C. Eric Hudson

Lisa Nichols

Kirt M. Nixon

(Continued from Page 8)

produced through the efforts of past Branch presidents David S. Huval, Jr., PE, and Jan C. Robichaux, EI. This commercial is designed to promote civil engineering as a profession and career choice to middle school students. The commercial aired last year on KADN - FOX 15 (Lafayette) at kid-friendly hours and on KLFY (CBS). Our Public Relations Committee Chair, Jeffrey Duplantis, will negotiate new air times and dates for the year.

Likewise, the success of last year s donation of civil engineering books to the Lafayette Parish School Board has encouraged the Board to contact another parish school board office in the Branch to participate in the donation of civil engineering books to their libraries. The books were donated to middle and elementary schools in an attempt to pique the interest of students before they reach high school and when the current curriculum choices are vital for college-bound students.

As part of its attempt to reach out to the high school students in the Branch, the Board visited the Engineering Academy at Northside High School last year. As a continuing effort, the speaker for this month's branch meeting will be Mrs. Deanie Spikes with the Engineering Academy at Northside High School in Lafayette. She will cover the current curriculum, what she envisions as the future for the program, and how the Academy prepares future engineers for college.

In conclusion, I would like to wish all a safe and speedy recovery from the hurricane that struck the Acadiana Area. It was sad to see the physical damage, pain and loss that was associated with the storm. However, it is heartwarming seeing everyone pulling together in helping friends, neighbors and families. A special thanks to all the people outside of the area who have helped in the recovery.

(Continued from Page 4)

bachelor's degree once did, prepare the engineer in advance for the immediate job duties often required of a new employee.

The poor condition of the transportation infrastructure — already evident — was highlighted in the grading of the nation's highways by the ASCE. The 2001 Report Card graded the nation's general infrastructure a "D+" based on 12 categories. Public roads were graded a "D." In his recent testimony to a congressional committee, Tom Jackson commented that transportation systems have benefitted greatly from federal and local funding from the enactment of TEA-21 in 1998. It provided $218 billion in federal funding. He stated that the only way to close the poor condition gap and meet continuing demand for improved highways is to increase the federal motor fuel tax by a recommended 6 cents per gallon to annually generate an additional $45 billion for the Highway Trust Fund. The surface transportation program's annual shortfall is estimated at $27 billion. The full text of Tom's testimony is at http://www.asce.org/govrel/tea3/.

ASCE is taking the lead in pushing for the funding of programs to repair existing roadways and/or developing alternative transportation modes. Venturing into this endeavor will not be easy because of the present economic situation. ASCE's August 2002 e-newsletter highlighted President Bush's recent rejection of a $5.1 billion emergency appropriation package containing funding for transportation-related and other items. Engineers' participation in government at local, state, and national levels can help gain support for needed infrastructure development and improvement work. ASCE has a Government Relations staff that can help with this monumental effort. Keep tuned to ASCE newsletters and magazines for these challenges.

BATON ROUGE

By J. Keith Shackelford, PE, President

During the Branch meeting September 19, 2002 the following Branch officers were installed and initiated into service for the 2002-2003 administrative year:

- J. Keith Shackelford, PE, President
- David M. Burkholder, PE, President-Elect
- André M. Rodrigue, PE, Vice President
- Thomas T. Roberts, PE, Secretary-Treasurer
- Daniel C. Peters, PE, Director
- Gregory P. Sepeda, PE, Director
- Jesse T. Thompson, EI, Director

Roy A. Waggenspack, PE, Past President, was presented with a commemorative plaque acknowledging the appreciation of the Branch for his service as Branch President for the 2001-2002 administrative year. As the Past President, Roy will remain active representing the Branch at the state level and especially in organizing the Section Annual Spring Meeting and Conference to be hosted by the Branch this year.

The new Board has already been hard at work planning Branch activities for the year. Michael N. Dooley, PE, has done his normal excellent job in lining up the featured speakers for the Branch meetings and luncheons scheduled for the entire administrative year. The list of speakers and their topics planned for these meetings includes a number of previous speakers from government and some new speakers with equally interesting and informative topics. Once again, it is planned to conduct three continuing education programs following the November, March and June Branch meetings and luncheons. Our speaker for the October Luncheon will be State Representative William B. Daniel, IV, PE, who will discuss upcoming legislative issues.

Oscar J. Boudreaux, Jr., PE, and Roy Waggenspack are to be commended for their efforts in organizing the seminar, *Advanced Wastewater Treatment — Activated Sludge Process and Nutrient Removal*, sponsored by the Branch. This two-day, 16-hour continuing education program was held in Baton Rouge September 12 and 13 at the Holiday Inn East. A total of 62 people attended this seminar that presented an in-depth approach to advanced wastewater treatment process design. The Branch is planning to make this continuing education program a biennial series of equally informative seminars on other topics.

The 2003 Section Annual Spring Meeting and Conference will be hosted by the Branch. It is planned to be held in Baton Rouge and it is scheduled for March 19 - 21 at the Sheraton Hotel. Conference events will kick off with an evening social on the 19th followed by two days of conference business, seminars and workshops. This conference will offer an excellent and economical opportunity to acquire the professional development hours required to maintain engineering licensure in Louisiana. A complete schedule of Conference events and seminar topics will be available and published in the near future.

The annual Christmas party sponsored by the Branch has been scheduled. It will be Friday, December 6, 2002 from 7:00 to 10:00 pm at the Bocage Racquet Club.

J. Keith Shackelford

David M. Burkholder

André M. Rodrigue

Thomas T. Roberts

Gregory P. Sepeda

Roy A. Waggenspack

The Branch Board is responsible for appointing for a 2-year term a member on the East Baton Rouge Parish Engineering Selection Board. The appointment of a new member to fill this position for the next term beginning January 1, 2003 is close at hand. Any member of the Branch interested in volunteering to serve in this position should contact a board member as soon as possible. Please be advised that a Selection Board member and the firm for which he/she works are proscribed from being selected for City/Parish engineering work during the two-year term on the Selection Board and for two years following the completion of the term. I wish to take this opportunity on behalf of the Branch to thank the Branch's current member on the Selection Board, L. Christopher Williams, PE, for his excellent service during his tenure.

NEW ORLEANS

By Daniel L. Bolinger, PE, President

The new administrative year began when the new Branch Board of Directors was installed September 13, 2002 during the Annual Meeting Louisiana Section and the Awards and Installation Banquet hosted by the Branch. The following new Branch officers were installed by past District 14 Director, James C. Webb, PE:

- Daniel L. Bolinger, PE, President
- Christopher G. Humphreys, PE, President-Elect
- Deborah D. Keller, PE, Vice President
- William H. Sewell, Jr., PE, Treasurer
- Christopher L. Sanchez, EI, Secretary
- Gustave S. Cantrell, PE, Director
- Peter R. Cali, PE, Director
- Reda Bakeer moves to the position of Past President.

The Branch in conjunction with the Louisiana Chapter of the American Concrete Institute sponsored the 12th Annual Louisiana Civil Engineering Conference and Show September 12-13, 2002 at the Pontchartrain Center in Kenner. This event continues to grow in response to interest from participating sponsors, technical material suppliers, practicing engineers and contractors. The Conference had over 400 registrants, and featured 38 technical sessions, 33 exhibitors and was sponsored by 27 local engineering companies.

The technical seminars gave licensed engineers the opportunity to obtain 15 PDHs at a very reasonable cost. The seminar topics covered many areas of interest in civil, structural, environmental, geotechnical, design codes, surveying datum and ethics. Specific topics presented included

- pavement management
- river management
- continuity diaphragms in skewed concrete bridges
- peer review processes
- wind tunnel testing for buildings in hurricane-prone areas
- drydock hydrostatic relief systems
- fire safety codes
- the Maurepas freshwater diversion project and
- geotechnical applications for centrifuge modeling.

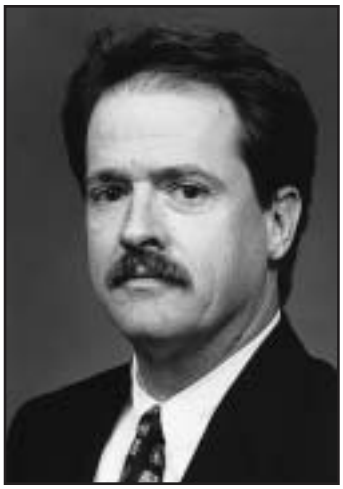
The Conference was a wonderful success due to the efforts of the steering committee chaired this year by Christopher G. Humphreys, PE, for the Branch and Mark A. Cheek, PE, for the Louisiana Section of the ACI. In addition to the co-chairs the Conference was successful due to the substantial efforts of the following volunteers:

- Ryan Koenig, Technical Program and Speakers
- Gustave S. Cantrel, PE, and Norma Jean Mattei, PE, Exhibitors
- William W. Gwyn, PE, and Thomas M. Smith, PE, Sponsors
- Frank C. McCaskell, PE, Website and Publicity
- Stephen C. Bourg, PE, Registration
- Harry W. Stinchcomb, Jr., PE, Catering and Banquet
- Deborah D. Keller, PE, Treasurer

The Branch and the Louisiana Section of the ACI are planning to host the 13th Annual Louisiana Civil Engineering Conference and Show on September 11-12, 2003.

(Continued on Page 12)

Daniel L. Bolinger



Christopher G. Humphreys

Deborah D. Keller

William H. Sewell, Jr.

Christopher L. Sanchez

Reda Bakeer

Gustave L. "Gus" Cantrell

Peter R. Cali

(Continued from Page 11)

The Branch continues to sponsor the monthly Branch meetings and luncheons, and invite guest speakers to present topics of general interest to the membership. In addition, the Branch technical committees are also planning several technical events during the year. Information for all of these events and the 2003 Conference will be available on the Branch website — http://www.asceno.org/ — or on the seminar site — http://www.cpdseminars.com/. The Branch technical committees are chaired by the following personnel:

- Anthony F. Goodgion, PE – Structures Committee
- Peter R. Cali, PE – Geotechnical Committee
- David A. Cole, PE – Environmental & Water Resources Committee

The Outreach Committee, chaired by Norma Jean Mattei, PE, will continue community outreach efforts in various events throughout the year. A Kids Area in the Jazz and Heritage Festival will reach out to children with civil engineering fun-based activities. The Branch will continue to be active in judging entries and supplying prizes for the Greater New Orleans Science and Engineering Fair. The other Branch committees will be chaired by the following personnel:

- Frank C. McCaskell, PE, Web Page
- Tanja L. Koob, PE, Membership
- Deborah D. Keller, PE, 2003 Fall Conference
- Harry W. Stinchcomb, Jr., PE, Public Relations
- Aurora N. Luscher, EI, Younger Members

Tulane University ASCE Student Chapter

- John H. Grubbs, PE, Faculty Advisor
- Peter R. Cali, PE, Practitioner Advisor
- Aurora N. Luscher, EI, Practitioner Advisor

New Orleans University ASCE Student Chapter

- Norma Jean Mattei, PE, Faculty Advisor
- Gustave S. Cantrel, PE, Practitioner Advisor
- Christopher L. Sanchez, EI, Practitioner Advisor

This year the Branch plans to continue to bring civil engineers and civil engineering to the forefront of the public consciousness through the sponsorship of radio announcements.

I would like to take this opportunity to thank you, my fellow Branch members, for the vote of confidence. I look forward to an active year of service to you.

Younger Member Group

By Aurora N. Luscher, EI, Chair

On August 22, seven members of the New Orleans Branch Younger Member Group dined at Frankie and Johnny's in Uptown New Orleans. This August social dinner was followed by a Home Repair Volunteer Day in Mid-City New Orleans.

The project was organized through the Volunteers of America Safety of Seniors (SOS) Program. Program coordinator Jesse Sharrard selected a project at 4148 D'Hemecourt Street to tackle. Five YMs and 2 Tulane students woke up early on Saturday, September 14, arriving at the home for 9:00 am to effect repairs.

The homeowner, who is in her 70s, lives with her 90-year-old mother and cares for several grandchildren on a regular basis. As a homeowner over 60, she qualified for the SOS program, which provides home maintenance and safety assessments for seniors over 60. Senior citizens over 60 who own their own homes also qualify for minor home repairs. Clients of the SOS program are required to pay the cost of materials. Labor for home repairs is provided free of charge by volunteers through the SOS program.

The homeowner, however, was an exception. Her home needed multiple and necessary repairs that she could not afford. Consequently, the YM Group contributed $115.58 toward the cost of the materials and the volunteers for the repair project while the homeowner contributed $50 towards the cost of the materials, which was all she could afford.

The YMs assembled and installed two pipe handrails, replaced 10 windowpanes, repaired and replaced the screens on 3 screen doors and installed a new sink trap. This was accomplished in a work period between 9:00 am and 2:00 pm.

There were approximately 20 YMs who expressed interest in volunteering for this maintenance project. However, because only a small number were available on the day chosen, a second volunteer project with the SOS program is planned for sometime next spring.

The YM Group plans to continue having monthly meetings. The socials sponsored by the YM Group at the local taverns and restaurants seem to be a favorite among its active contingent, so plenty of socials will be included as future events to encourage participation. Also in the planning is an outing to attend a New Orleans Zephyrs minor league baseball game, participation in community outreach projects, and meetings with guest speakers. Members of the New Orleans Branch who are 35 years old and younger and who are interested in being on the YM Group e-mail list should e-mail youngasce@yahoo.com and express your interest.

Structures Committee

By Mark H. Gonski, PE, Vice Chair

The Structures Committee had a successful 2001-2002 administrative year under the leadership of its Chair, John A. Crutti, PE sponsoring 5 seminars including

- February 28, 2002; *Modern Welding Practice and Installation*
  David Mandina, Mandina Inspection Services, Inc.
- June 2002; *Performance of Structures in National Disasters*
  2002 David Hunter Lecture
  Vijaya K. Gopu, PE, University of Alabama-Huntsville
- July 18, 2002; *Galvanize It*
  Dale Williams, Aztec Galvanizing Services, Belle Chasse
- October 24, 2002; *Devils Tower Spar: Design and Installation*
  2002 Offshore Seminar

Plans for the 2002-03 administrative year will feature the Light Gage Metal Building Design seminar followed by a special seminar on the World Trade Center attack and collapse:

- Light Gage Metal Building Design
  Speaker: Melvin R. Loseke, PE
  Date: December 5, 2002
- World Trade Center Building Performance Study — Data Collection, Preliminary Observations, and Recommendations
  Speaker: W. Gene Corley, PE
  Date: February 6, 2003

Unless otherwise noted, all seminars are held at the University of New Orleans in the Engineering Auditorium. Registration begins at 5:00 pm and the programs commence at 5:30 pm.

The Committee has also continued its support of MATHCOUNTS and Regional Science Fairs. It provides judges, monetary awards and donations to promote the young minds interested in the engineering profession. Committee member Norma Jean Mattei, PE, organized the Branch's involvement at the New Orleans Jazz and Heritage Festival held on the Fairgrounds. The effort involved operating a children's activity centered on creating a city from legos and boxes. (See article by Mattei in the August 2002 issue.) Another member, Subhash V. Kulkarni, PE, is representing the Committee in the revisions to the New Orleans Parish Building code. When solicited for help, the Committee also provides donations to help ASCE student chapters in the Branch participate in concrete canoe competition.

The Committee elected the following new leadership for the 2002-03 administrative year:

Anthony F. Goodgion, PE, Chair
James R. Danner, Jr., PE, Treasurer
Mark H. Gonski, PE, Vice Chair
Mark H. Gonski, PE, Editor

During the year Steering Committee added a new member, Paul Ziel, an Assistant Professor at Tulane University. John L. Nicklaus completed his service on the Steering Committee this year.

As always, the committee is looking for new seminar topics and presenters. Information can be forwarded to Anthony Goodgion at agoodgion@lhjunius.com or Mark Gonski, at gonskim@bellsouth.net.

The Section Annual Meeting was held in New Orleans the evening of September 13, 2002 and hosted by the New Orleans Branch in the facilities of the New Orleans Country Club. This membership meeting marks the beginning of the new administrative year for the Section that follows the conclusion of the installation of the elected Section Board of Directors. It has been traditionally held in conjunction with a banquet featuring the installation of the Section Board of Directors. More recently the ceremonies were expanded to include the presentation of awards recognizing the contributions of outstanding Section members.

The events of the evening are always poignant for those in attendance and particularly for those who are involved in the volunteer services to the Section and its membership and the Section members being honored. These events are chronicled here in word and image to share their poignancy with one and all.

Outstanding Young Civil Engineer

This award is given annually to that Member or Associate Member of the Section who has distinguished him/herself through service to — or involvement in — the ASCE; service to the advancement of the profession; service to the community outside the field of engineering; technical accomplishments; and any other evidence of merit or character. The award recipient must be a licensed professional engineer or a certified engineer intern and be 35 years old or less at the time of the nomination.

The 2002 Outstanding Young Civil Engineer is **Glenn McCall,** PE, from the Acadiana Branch. Glenn earned his BS in Agricultural Engineering from the University of Louisiana at Lafayette in 1996 and a BS in Civil Engineering from the University of Louisiana at Lafayette in 1997. He is a licensed professional engineer in Louisiana and employed as a design engineer with the firm Berard, Habetz and Associates in New Iberia. Glenn has experience in roadway, drainage, concrete and structural steel design.

Glenn most recently has been an active Board member of the Acadiana Branch serving as its web page administrator, Treasurer, President-Elect and President. In addition to this service, he has participated in several recruiting trips to local high schools to promote civil engineering and in several Engineering Day activities in conjunction with the University of Louisiana at Lafayette. As a student at the University of Louisiana at Lafayette, he served as the Vice President of the ASCE Student Chapter and captain of its steel bridge team.

Glenn served eight years in the Louisiana Army National Guard where he obtained the Grade E-6 Staff Sergeant. He was called to active duty twice — once for Operation Desert Storm and again in response to Hurricane Andrew. He has coached T-ball and little league baseball teams.

Outstanding Government Civil Engineer

This award is given annually to that Member, Fellow Member or Life Member of the Section who has distinguished him/herself through service to — or involvement in — the ASCE; service to the advancement of the profession; service to the community outside the field of engineering; technical accomplishments; and any other evidence of merit or character. The award recipient must be a licensed professional engineer and be an employee of a federal, state or local government agency.

The 2002 Outstanding Government Civil Engineer is **Ehab A. Meselhe,** PE, from the Acadiana Branch. Ehab received his BS in Civil Engineering in 1987 from Zagazig University in Egypt, his MS in Civil and Environmental Engineering in 1991 from the University of Iowa and his PhD in Civil and Environmental Engineering in 1994 from the University of Iowa. He is a licensed professional engineer in Louisiana and Iowa.

Ehab is an Associate Professor in the Civil Engineering Department at the University of Louisiana at Lafayette where he has assisted in the development of the Hydrologic Model GIS-SHA used by the US Army Corps of Engineers, the Emergency Management River Oil Spill Models for the lower Mississippi, the design and assessment of Fish Diversion Studies at Wanapum Dam and the development of a software package, CanalCAD. He has also published several technical notes and full papers in journals and national and international water resource conferences.

Ehab is actively involved in the ASCE, serving as the Faculty Advisor of the University of Louisiana at Lafayette ASCE Student Chapter for the past 3 years and he has received the 2001 Award under the ASCE Faculty Advisor Reward Program. He is currently the chair of the National ASCE Task Committee to write a "Computational Hydraulics" monograph as well as the Vice Chair for the National ASCE "Computational Hydraulics" Technical Committee. He also assisted with the Joint XXVII IAHR Congress and the ASCE Conference held in San Francisco, California in 1997.

Ehab also participates in MATHCOUNTS and the science fairs for high schools. He has served as an official referee in local soccer tournaments, Administrative President for his church and a volunteer for the Bayou Vermilion District for cleaning and maintaining Vermilion River.

(Continued on Page 14)

A. J. Szabo, PE, receives his commemorative plaque from President Mark W. Snow, PE, for the 2002 Lifetime Achievement Award.

Mark B. Dubroc, PE, receives his commemorative plaque from President Snow for the 2002 Outstanding Civil Engineer Award.

Glenn McCall, PE, receives his commemorative plaque from President Snow for the 2002 Outstanding Young Civil Engineer Award.

(Continued from Page 13)

Outstanding Civil Engineer

This award is given annually to that Member, Fellow Member or Life Member of the Section who has distinguished him/herself through service to — or involvement in — the ASCE; service to the advancement of the profession; service to the community outside the field of engineering; technical accomplishments; and any other evidence of merit or character. The award recipient must be a licensed professional engineer.

The 2002 Outstanding Civil Engineer is **Mark B. Dubroc,** PE, from the Acadiana Branch. Mark earned his BS in Civil Engineering from Louisiana State University in 1980. He is a licensed professional engineer in Louisiana and is a Vice President of the firm Dubroc Engineering, Inc. in Lafayette. His professional experience includes roadway, drainage, structural and solid waste transfer station design.

Mark has been an active member of the ASCE since 1982 when he joined as a charter member of the Acadiana Branch. He has served the Acadiana Branch, as well as the Louisiana Section in all of their elected offices. Mark has also been a delegate to the District 14 Council and has served on an ASCE national task committee. He was an active voice on behalf of the Section concerning the issue of section allotments and served on the ASCE Task Committee on Section Allotments.

As an employer of civil engineers Mark strongly encourages and promotes membership and participation in the ASCE, LES and CEC/L. He served 3 years as the local MATHCOUNTS coordinator and 2 years as its assistant state coordinator for the Louisiana Engineering Society. Mark has served as a volunteer director of the Lafayette District Telephone Credit Union, assistant coach for his daughters' basketball and softball teams. In addition, he is an active member and a former director of the Beaver Club of Lafayette.

Lifetime Achievement Award

This award is given annually to that Fellow Member or Life Member of the Louisiana Section who has distinguished him/herself through lifetime achievement in the civil engineering profession, lifetime service to — or involvement in — the ASCE; technical accomplishments, and any other evidence of merit or character. The award recipient must be a licensed professional engineer and be 55 years old or older at the time of the nomination.

The recipient of the 2002 Lifetime Achievement Award is **A.J. Szabo,** PE, from the Acadiana Branch. A.J. received his BS in civil engineering from Louisiana State University in 1943 and his MS in Sanitary Engineering from Harvard University in 1950. He is a licensed professional engineer in Louisiana and Mississippi.

After graduation, A.J. served in the military during World War II from 1943-1945 as a 2nd Lieutenant and 1st Lieutenant in the 804th Engineer Aviation Battalion in Central Pacific Theater. He designed and constructed airfield infrastructure in Hawaii, Baker Island, Makin Island and Saipan where the B-29 Superfortress bombers were first used in the Pacific.

From 1946-1949, A.J. worked as a Public Health Engineer for the Louisiana State Board of Health - Northern Region. He attended Harvard University to pursue his MS from 1949-1950. He returned to Louisiana and the Louisiana State Board of Health Southwest - Central Region and worked as a Public Health Engineer from 1950-1955.

In 1955 A.J. became an Associate Professor in the Department of Civil Engineering at what is now the University of Louisiana at Lafayette. He was an instructor in engineering, mechanics, hydraulics, hydrology, water supply and treatment and wastewater collection and treatment

(Continued on Page 15)

I met with Mr. Szabo to ask him some questions about civil engineering and his career. He shared the following with me:

Mr. Szabo feels his greatest accomplishment is living to be as old as he is today. He felt that each project he works on is a challenging project. What he enjoyed most about being a civil engineer was the idea of designing and constructing projects for the good of society.

I asked Mr. Szabo what he felt was the biggest change in civil engineering since he began his career. His response was that society has changed. Years ago the engineer was looked up to. The client used to approach the engineer for a solution to a problem. This client-engineer relationship has changed due to growth, technology and society as a whole.

When Mr. Szabo was a young engineer he remembers that the ASCE had a program called *the 2nd mile.* This program prompted engineers to go the extra mile in all civil engineering endeavors. The idea was that if you can go one mile, just go one more. He observed that such is not necessarily the case now. I then asked Mr. Szabo what advice would he give a young civil engineer. His response was to like your work. Look for work that you like and work that makes you feel like you are accomplishing something and helping others then *...go the 2nd mile.*

To say the least, the interview with Mr. Szabo was a very enlightening experience. One that left me thinking about the civil engineering profession and my future in it. I wish to express my heartfelt gratitude to Mr. Szabo for being so available to me and for his efforts in bringing the practice of civil engineering to the forefront in the Lafayette area. As a young engineer speaking to someone with the experience and achievements that Mr. Szabo possesses is truly inspirational. I will now challenge myself to *...go the 2nd mile.*

- Pamela G. Miller, PE

Ehab A. Meselhe, PE, receives his commemorative plaque from President Snow for the 2002 Outstanding Civil Engineer in Government Award.

Section and New Orleans Branch officers installed during the Annual Meeting from left are Chris Sanchez, William Sewell, Deborah Keller, Chris Humphreys, Mark Snow, Daniel Bolinger, Gus Cantrell, Charlie Eustis, Pat Landry, Pamela Miller, Barbara Featherston, Reda Bakeer, Norma Jean Mattei and Larry Cramer.

Louisiana Civil Engineering Conference and Show

By Christopher G. Humphreys, PE

The New Orleans Branch, in association with the Louisiana Chapter of the American Concrete Institute, hosted the 12th annual Louisiana Civil Engineering Conference and Show September 12th and 13th at the Pontchartrain Center in Kenner, Louisiana. As in previous years the Conference was a tremendous success and an excellent opportunity for civil engineers, contractors, material suppliers and engineering and construction product manufacturers to meet, network and share knowledge and information.

There were over 450 registrants attended the intensive two-day event. It featured a total of 38 technical sessions covering general civil, structural, geotechnical, environmental and transportation engineering topics as well as sessions on ethics and business practices. Participants had the choice from three concurrent sessions that were provided continuously over the two-day event. In addition to the technical and business presentations, a total of 31 exhibitors were on hand to display technical products and services.

The technical and ethics presentations made during the Conference meet the Louisiana Professional Engineering and Land Surveying Board requirements for the professional development hours to be accrued by its licensees. Thanks to the more than 30 area companies that purchased sponsorships, the conference has become recognized as an excellent and affordable opportunity to acquire the professional development hours necessary for licensed civil engineers retaining their licensure in Louisiana.

(Continued from Page 14)

from 1955-1963. It was during this time when the Department and College of Engineering earned accreditation. During the summer of 1956, A.J. worked for the U.S. Army Corps of Engineers —Vicksburg District.

In 1957, A.J. co-founded the consulting engineering and surveying firm of Domingue, Szabo & Associates, Inc. This firm was the first true civil engineering firm in Lafayette. From 1957-1991, A.J. was a principal and officer of the firm who performed studies in needs for water system, sewer system, drainage, streets and other infrastructure in the growing City of Lafayette. From 1963-1991 he also designed major airport development projects for the Lafayette Regional Airport to include runways, taxiways, drainage, roads, parking, embankments and aviation safety improvements. His firm is also responsible for many wastewater collection systems, wastewater treatment plants, water treatment plants and water distribution systems throughout Southwest Louisiana.

A.J. was a student member of the ASCE at Louisiana State University and has been a member of ASCE since 1951. He served as the Faculty Advisor for the ASCE Student Chapter at the University of Louisiana at Lafayette from 1957-1962 and as the Contact Member for the University of Louisiana at Lafayette ASCE Student Chapter for several years after 1963.

A.J. has been an active member of the Greater Lafayette Chamber of Commerce since 1958, where he served as a Board Member from 1971-1973 and again from 1981-1987. A.J. has been a Board Member of the Louisiana Engineering Foundation since 1979 and he served as President of the Board from 1985-1987. From 1961-1998 he was a Certified Diplomate of the American Academy of Environmental Engineers.

A.J. is a native of Baton Rouge. He has raised three children, Becky, John and Bob, and now resides in Lafayette (retired) with his wife, Ruth. He has been a member of the Rotary Club of Lafayette since 1963, serving as its President from 1969-1970. In addition, A.J. has been a member and Deacon of Lafayette First Baptist Church since 1951 where he served as its treasurer for 40 years until 2000.

— Calendar of Events —

December 6, 2002	ASCE seminar* on cable-stayed bridges in New Orleans.
December 12-13, 2002	ASCE seminar* on tips for mastering the Q&A sessions in community meetings, public hearings and the short list interview in Dallas, Texas.
January 16-17, 2003	ASCE seminar* on construction administration for engineers in Houston, Texas.
January 16-17, 2003	ASCE seminar* HEC-HMS computer workshop in Vicksburg, Mississippi.
January 23-24, 2003	7th Annual Joint Engineering Societies Conference in Lafayette, Louisiana. For more information contact the Louisiana Engineering Society (225) 924-2021 or http://www.les-state.org.
January 28, 2003	Seminar on the World Trade Center collapse presented by W. Gene Corley, PE, sponsored by the New Orleans Branch in New Orleans.
January 30-31, 2003	ASCE seminar* on comprehensive site design workshop in Dallas, Texas.
February 13-14, 2003	ASCE seminar* on financial management for the professional engineer in Dallas/Fort Worth, Texas.
February 27-28, 2003	ASCE seminar* on alternative wastewater collection and treatment in New Orleans.
March 6-7, 2003	ASCE seminar* on structural condition assessment of existing structures in New Orleans.
March 6-7, 2003	ASCE seminar* on structural renovation of buildings in Atlanta, Georgia.
March 13-14, 2003	ASCE seminar* on pumping systems in New Orleans
March 17-18, 2003	ASCE seminar* on wetlands and 404 permitting in Dallas, Texas.
March 19-21, 2003	Section Annual Spring Meeting and Conference in Baton Rouge hosted by the Baton Rouge Branch.
March 27-29, 2003	Deep South Conference of ASCE student chapters in New Orleans hosted by Tulane University.
September 11-12, 2003	13th Annual Louisiana Civil Engineering Conference and Show in New Orleans sponsored by the New Orleans Branch.
September 12, 2003	Section Annual Meeting in New Orleans hosted by the New Orleans Branch.

* For more information, call ASCE toll free at (800)548-2723 or visit the ASCE web page www.asce.org.

Student Chapter News

Louisiana Tech University

By Leslie Chauvin

The Chapter's surveying team — Leslie Chauvin, Michael Kelly, Holly O'Neal, and Robert Swayze — placed first in the Deep South Conference surveying competition in March 2002. This qualified them to participate in the one-time national surveying competition scheduled during the ASCE 150th Anniversary National Student Conference scheduled for June 21-24, 2002 in Madison, Wisconsin.

The team's first-place effort in the Deep South Conference surveying competition and their hard work and persistence did not escape the notice of Rodney A. Ray, PLS, who is an adjunct faculty member and land surveying instructor at Louisiana Tech. Ray facilitated the students' efforts in contacting engineering firms around north Louisiana to raise the funds to cover their registration fees and travel expenses to the National Student Conference.

The surveying team traveled with the Tech Chapter's Faculty Advisor, Norman D. Pumphrey, Jr., PE, to the University of Wisconsin - Madison that hosted the National Conference. The surveying competition was held Sunday morning. The team was given two hours to complete two separate competition assignments. Each team member had to pace off the distance around a large rectangular area located on hilly terrain that made accurate pacing somewhat difficult. This was the individual assignment representing 40 points of the total score. The team assignment representing the remaining 60 points of the score was, given two known benchmark elevations, determine the elevation of the top of a flag pole located on the campus building, Bascom Hall.

With a score of 88 out of a possible 100 points, the Tech surveying team finished first among 14 competing teams from universities across the United States. The University of Florida finished second in the competition. The team returned from the National Conference ready for another busy school year.

The Chapter held its first membership meeting on September 26 in conjunction with the Shreveport Branch that hosted a barbeque after the meeting. Joe E. "Butch" Ford, PE, the Shreveport Branch President, and G. Walter Carpenter, Jr., PE, spoke to the Chapter members present about civil engineering as a career choice.

Ernest R. Perez, PE, from ExxonMobil was the featured speaker during the Chapter's meeting on October 10. Ernie Perez is a 1966 electrical engineering graduate of Louisiana Tech and he serves as the head Louisiana Tech recruiter for ExxonMobil. His topic was civil engineering extends beyond roads and bridges — there are significant career opportunities for civil engineers in industry. Ernie also provided insight into what a recruiter looks for in an engineering student and a prospective employee.

As a service to the Ruston community, members of the Chapter have been working with fellow architecture and construction students on the restoration of Dixie Theater located in downtown Ruston. The students have been volunteering their time on Saturdays to help tear out floors and walls so the theater's renovation can begin.

(Left) The Louisiana Tech surveying team (from left) Robert Swayze, Holly O' Neal, Leslie Chauvin, and Michael Kelly relax after winning first place during the National Student Conference surveying competition. Behind them is Bascom Hall for which they had to find the elevation at the top of its flagpole (not visible). (Right) Tech Student Chapter members fix their hamburgers during the barbeque hosted by the Shreveport Branch after the Chapter's first fall meeting.

Did you know . . .

. . . that the Environmental Engineering Exam Committee of the National Council of Examiners for Engineering and Surveying held an exam development meeting in New Orleans in July 2002 where all licensed environmental engineers in Louisiana were invited to help write items — that is, questions — for the Exam? The more than 40 participants in the meeting produced 148 items spread evenly over the main subject areas of environmental engineering.

. . . that it is alleged as construction systems have become more complex, the assignment of responsibility for quality construction is more difficult? This is compounded by the emergence of new trades giving the general contractor less of a presence in the construction. These conditions, according to John Butler, director of Atlanta's construction division of the Georgia State Financing and Investment Commission, are more conducive to construction flaws (*Engineering News-Record,* 03/18/02). Butler is attempting to resolve these problems.

By altering the contract terms of the construction planning period in the first 60 days following the award of a contract to require contractors to review and comment on the plans and specification and provide a construction management plan, forces them to consider the resources needed, and where and when they will be required. Contractors are also required to come up with a quality control plan that all of the subcontractors have to sign. Butler is also working with the National Association of State Facilities Administrators and the Associated General Contractors of America to address the persistent deficiency he perceives in construction quality.

Section News and Information

Highlights of the October Board of Directors meeting

An imbalanced budget for the 2002-2003 fiscal year was adopted by the Board.

- $49,900 anticipated income
- $52,500 anticipated expenses

Some major income categories were

- $20,000 Section dues
- $ 7,000 Section allotment
- $ 2,500 voluntary contributions
- $17,000 Section journal
- $ 2,500 Public Affairs Grant

Some major expense categories were

- $ 5,000 branch allotments
- $10,900 student activities
- $12,200 Section journal
- $ 1,600 District 14 Council
- $ 5,300 meetings
- $ 3,400 conventions/conferences
- $ 1,200 miscellaneous
- $ 4,400 office/secretarial
- $ 2,500 public affairs
- $ 2,000 150th Anniversary
- $ 1,800 Website

An unusual expense in the 2001-2002 fiscal year that will not be resolved as originally planned was an expense of $10,000 that was put up by the Section out of its reserve funds to participate in the *Rebuilding Together Project* in New Orleans. This expense was to be recovered by corporate donations principally from the New Orleans area. However, only $1,050 was collected resulting in a substantial net loss. The remainder is now considered by the Board as unrecoverable and therefore a permanent loss of approximately 25 percent to the Section's reserve funds. The Section's remaining reserve funds — approximately $31,100 — are still above the 50 percent of its annual budget and available for covering unanticipated expenses. It was noted that this reduction in reserve funds is consistent with sentiments expressed by some members of previous Boards who believed that the Section's reserve funds were too large and should be used. No official action was taken by the Board on this matter individually other than adopting the 2002-2003 Section budget.

The webmaster retained to develop the Section's website is actively redeveloping it and it should be on line sometime during the next 3 to 6 months. The site is being developed to be more consistent in format with the ASCE national website.

The Acadiana Branch is assisting the Lafayette Chapter of the Louisiana Engineering Society in the organization and development of the 7th Annual Joint Engineering Societies Conference scheduled for January 23-24, 2003 in Lafayette. This statewide conference is sponsored by the LES and it will be held in the Holiday Inn Holidome in Lafayette.

The Baton Rouge Branch is in the early planning stages for the 2003 Section Annual Spring Meeting and Conference it has agreed to host. The convention hotel will be the Sheraton Hotel in downtown Baton Rouge and it is located in conjunction with the Argosy Casino facilities.

The New Orleans Branch is considering a response to an article that appeared in the September 22, 2001 issue of the *Times Picayune* titled "That Sinking Feeling." It is believed that the article does a disservice to the homeowners in the New Orleans region who may have foundation problems. The article discusses the foundation problems found in the New Orleans area and appears to be geared toward the sale of commercial structural and foundation repair services often not founded on the application of sound engineering principles. The corroboration of some of its thesis is apparently made by out-of-context observations allegedly made by unidentified professional engineers. Generalized assumptions are presented about residential foundation problems and their restoration in the New Orleans region. In some instances they appear to be simplistic, erroneous and/or misleading when compared to the common causes of residential foundation failure and to the feasibility of their effective restoration. In other matters, the Branch has scheduled the next Louisiana Civil Engineering Conference and Show for September 11-12, 2003 and it is planning to place itself in nomination for the ASCE outstanding branch award.

The Shreveport Branch is planning to cooperate with an initiative of the Shreveport Fire Department in developing an advisory group of engineers to aid in effectively surveying the aftermath of the collapse or partial collapse of certain major structures. They will evaluate the nature of the failure and reasonably assure the safe investigation and removal of the debris while attempting to preserve forensic evidence following the emergency and during recovery operations.

Implementation of ASCE Policy 465

Several Section members in its leadership received an e-mail letter from fellow Section member, Angela D. Duncan, PE, who serves on the national ASCE Task Committee on Academic Prerequisites for Professional Practice (TCAP^3). The TCAP^3 was formed in October 9, 2001 and charged with developing, organizing, and executing a detailed plan for the full implementation of ASCE Policy 465 — *Academic Prerequisites for Licensure and Professional Practice.* The essence of this policy is "ASCE supports the concept of the Master's degree or equivalent (MOE) as a prerequisite for licensure and the practice of civil engineering at a professional level." There are 14 members on the TCAP^3 representing practitioners, younger members, educators, students, and the ASCE senior staff.

Angela is seeking the support of the Section's leadership on behalf of the TCAP^3 and providing it with an update of the TCAP^3 activities. Since there was substantial interest in ASCE Policy 465 generated in the Section beyond its leadership when it was being adopted, Angela's message should be poignant to many Section members. The following is the gist of her message:

Since its formation, the TCAP^3 has concentrated on communicating with stakeholders through published articles and presentations. Articles have been published in *Civil Engineering, Military Engineer, American Public Works Association* and other periodicals. Presentations have been made to the ASCE sections, branches, and student chapters; the National Academy of Engineering; the National Society of Professional Engineers; and other organizations. As a result of these efforts, personal and organizational commitments to help implement ASCE Policy 465 have been forthcoming.

The TCAP^3 is proactively working on 3 parallel long-term — 10 years and beyond — implementation initiatives. They include:

- Body of Knowledge/Curricula
- Accreditation and
- Licensure.

The Body of Knowledge/Curricula Committee is charged with

- defining the body of knowledge (BOK) needed to enter the practice of civil engineering at the professional level in the 21st century
- designing and/or identifying the BS - MOE programs and experience that will implement the BOK and
- describing the role of the faculty and practitioners in imparting the BOK.

The Accreditation Committee is charged with

- identifying the barriers and critical issues
- enlisting the help of the other engineering disciplines
- identifying methods of accreditation for MOE programs
- identifying professionals who can assist and
- identifying how ABET can assist.

The Licensure Committee is charged with

- identifying the barriers and critical issues
- enlisting help from NCEES, NSPE and ACEC
- recommending a regulatory definition of the BS - MOE and
- identifying state licensing boards that can pilot ASCE Policy 465 to implementation.

The ASCE is committed to raising the education bar for civil engineers via its Policy 465. The TCAP^3 is organized to lead the effort by pursu-

(Continued on Page 19)

Section officers installed

The elected and appointed officers on the Section Board of Directors were installed during the Section Annual Meeting in New Orleans September 13, 2002. The Section officers installed to serve during the 2002-2003 administrative year are

- Charles L. Eustis, PE, President
- Pamela G. Miller, PE, President-Elect
- Barbara E. Featherston, PE, Vice President
- Norma Jean Mattei, PE, Secretary-Treasurer
- Mark W. Snow, PE, Past President

Director-at-Large:

- Gustave S. Cantrell, PE
- Patrick J. Landry, PE
- Ali M. Mustafa, PE
- Thomas A. Stephens, PE

Assigned Branch Directors:

- Reda Bakeer, PE, New Orleans
- Roy A. Waggenspack, PE, Baton Rouge

Branch Directors:

- Larry A. Cramer, PE, Acadiana
- J. Keith Shackelford, PE, Baton Rouge
- Daniel L. Bolinger, PE, New Orleans
- Joe E. Ford, PE, Shreveport

Charles L. Eustis

Pamela G. Miller

Barbara E. Featherston

Norma Jean Mattei

Mark W. Snow

Gustave "Gus" S. Cantrell

Patrick J. Landry

Ali M. Mustafa

Thomas A. Stephens

Reda Bakeer

Roy A. Waggenspack

Larry A. Cramer

J. Keith Shackelford

Daniel L. Bolinger

Joe E. "Butch" Ford

— net surfing—

ASCE national organization:
http://www.asce.org

Note: Most ASCE-related pages can also be addressed through links at this website. All section and branch officers are listed at:
http://www.asce.org/gsd/localofficers

ASCE Acadiana Branch:
http://www.asceacadiana.org

ASCE Baton Rouge Branch:
http://branches.asce.org/batonrouge/index.htm

ASCE New Orleans Branch:
http://www.asceno.org

Louisiana Tech ASCE Student Chapter:
http://www.latech.edu/tech/orgs/asce/

UNO ASCE Student Chapter:
http://www.uno/~engr/asce/asce.html

ULL ASCE Student Chapter:
http://www.engr.usl.edu/cive

Tulane ASCE Student Chapter:
http://www.tulane.edu/~asce

LSU ASCE Student Chapter:
http://www.ce.lsu.edu/~asce

ASCE Louisiana Section:
http://www.lasce.org

Louisiana Engineering Society:
http://www.les-state.org

Louisiana Professional Engineering and Land Surveying Board:
http://www.lapels.com

(Continued from Page 17)

ing these initiatives and communicating with interested stakeholders. The draft BOK is being defined and accreditation and licensure initiatives are underway.

Support for the TCAP^3 effort is growing both in and outside of the ASCE. Stakeholder attitudes are shifting. It used to be: "You've got to be kidding." "Things will never change." "Who do you think you are?" Now it's becoming: "It will be a challenge and here is one idea on how to do it." "Civil engineers are weak in management/leadership and only we can fix that." "Civil engineers cannot be prepared in 4 years so 5 or more years is the way to go." "How can I help?"

Will implementation of the ASCE Policy 465 be quick? No! Will it be? Yes! Will it affect us professionally? Maybe. We may not be retroactively required to possess a MOE to maintain our engineering license but we will be responsible for teaching, hiring and supervising licensed engineers that are required to possess a MOE. It is therefore imperative that we are proactive in its implementation. This is your invitation to participate in the following and other ways:

- critique published articles
- arrange a presentation for your group
- inform your colleagues and
- start *something i*n your group.

The TCAP^3 will continue to interact and meet with stakeholders in the interest of moving them from awareness to understanding and facilitating action. Groups that can provide a venue and an audience and are interested in having or making a presentation with supporting materials on the topic, please contact the TCAP^3.

For more information, please visit the ASCE website www.asce.org/raisethebar. If you have questions or comments, please contact Angela at (504) 862-2733 or Angela.L.Desoto@mvn02.usace.army.mil; Brook Maples at (206) 926-0490 or brookie@earhtlink.net; Jeff Russell at (608) 262-7244 or russell@engr.wisc.edu; or Tom Lenox at (800) 548-2723 (Ext.6191) or tlenox@asce.org.

- Career Benchmarks -

Section members **Alison M. Catarella,** PE, **Benjamin M. Cody,** PE, **Gianna M. Cothern,** PE, **Jason L. Crain,** PE, **Dax A. Douet,** PE, **Christopher L. Dunn,** PE, **David L. Fulks, II,** PE, **Ryan J. Fuselier,** PE, **Chad L. Held,** PE, **Christopher J. Howard,** PE, **Charles E. Hudson,** PE, **Mark E. Hughes,** PE, **Bhaskar Kura,** PE, **Shane J. Nicholas,** PE, **Constance L. Porter,** PE, **Steven D. Sherrill,** PE, **Michael M. Smith,** PE, **Keith J. Spampneto,** PE, **Obie E. Watts,** PE, **Yvette P. Weatherton,** PE, recently earned their civil and/or environmental engineering license in Louisiana. If you are in contact with any of these engineers, please offer them your congratulations on their accomplishment.

Louisiana residents, **Brian M. Aguillard,** PE, **Thomas M. Andrus,** PE, **Jeffrey D. Bayham,** PE, **Denis J. Beer,** PE, **Wayne J. Berlin,** Jr., PE, **Ronny D. Bordelon, Jr.,** PE, **Peter R. Bowlin,** PE, **Donald J. Brinkman, Jr.,** PE, **Robert L. Brooks,** PE, **David L. Brown,** PE, **Colby C. Buller,** PE, **Jon A. Cabiro,** PE, **Steve P. Christner,** PE, **Howard D. Cole,** PE, **Lauren K. D Armond,** PE, **Brian D. Delatte,** PE, **Aubry J. Ferguson, Jr.,** PE, **Tafoor U. Hameed,** PE, **Joshua Y. Harrouch,** PE, **Donald J. Hogan, Jr.,** PE, **Michan D. Holbrook,** PE, **Daniel A. Jacobsen,** PE, **Roberto Jimenez,** PE, **Ennis D. Johnson,** PE, **Hyoh S. Kim,** PE, **Gregory A. Kolenovsky,** PE, **Elizabeth M. Komiskey,** PE, **Melvin K. Lara,** PE, **Brian R. Machado,** PE, **Jennifer D. Mayo-Kihlken,** PE, **Philip M. Mullan,** PE, **William J. Murray, IV,** PE, **Wade A. Newell,** PE, **Luan K. Nguyen,** PE, **Brian J. O Reilly, Jr.,** PE, **Thomas R. Olinde,** PE, **Cynthia A. Pennington,** PE, **Thomas W. Read,** PE, **Allison A. Schilling,** PE, **Kenneth T. Schlag,** PE, **Boyd C. Simon,** PE, **Lori A. Spear,** PE, **Thomas R. Swanson,** PE, **Melanie C. Vegas,** PE, **David J. Vossen,** PE, **Jean S. Vossen,** PE, **Brian E. Way,** PE, **Randi D. Wyatt,** PE, **Li Yang,** PE, **James L. Yates,** PE, **Andrew W. Zagars,** PE, **Lawrence P. Zeringue,** PE, recently earned their civil and/or environmental engineering license in Louisiana and are not members of the ASCE. A copy of this issue of the journal is sent to them as an informal introduction to the Section. If they wish to join and/or find out more about the ASCE, they are hereby encouraged to visit the ASCE national website, http://www.asce.org. If you are in contact with any of these engineers, please formally introduce them to the Section by inviting them to attend a branch meeting as your guest.

Revised regulations have implications for PEs

By Philip B. Curwick, PE

Introduction

On July 17, 2002 the U.S. Environmental Protection Agency (EPA) issued a final rule amending the Oil Pollution Prevention regulation (40 CFR 112) promulgated under the authority of the Clean Water Act. This rule includes new requirements for Spill Prevention Control and Countermeasure (SPCC) Plans and some new provisions for facility response plans. In most cases, the final rule requires that facilities covered under the EPA's SPCC regulations to update their existing SPCC Plan. Furthermore, since a professional engineer (PE) must certify the SPCC Plan, a review of the important implications of the final rule on the PE and the additional issues to be considered for the Plan preparation is provided herein.

Final rule revisions

The final rule became effective on August 16, 2002. It revises the applicability of the regulation, amends the requirements for completing an SPCC Plan, includes new subparts outlining the requirements for various classes of oil and makes other modifications. The final rule also contains a number of provisions designed to decrease the regulatory burden on facility owners or operators subject to the rule while preserving environmental protection. Earlier proposed rules and comments from October 22, 1991, February 17, 1993, and December 2, 1997 were incorporated into the final rule by the EPA. Some highlights of the new requirements of the final rule follow. The final rule

- exempts facilities with completely buried storage tanks regulated under 40 CFR Parts 280 or 281
- exempts any facility or part thereof used exclusively for wastewater treatment and not to meet any part the 40 CFR 112 requirement
- establishes a de minimis container size of 55 gallons
- establishes an aboveground storage capacity threshold of more than 1,320 gallons and removes the previous 660-gallon provision
- revises the threshold for reporting discharges to the EPA to over 42 gallons combined in no more than 2 discharges in any 12-month period
- allows deviations when equivalent environmental protection is provided
- provides for a flexible SPCC Plan format with a cross-reference showing that all regulatory requirements are met
- clarifies rule applicability to the storage and the operational use of oil, and
- changes the review period for SPCC Plans from 3 to 5 years.

Issues raised

Before finalizing the new rule, the EPA solicited comments from the public. The outcome of the public comments and the EPA's response has raised issues that have several implications on the PE's certification of the SPCC Plan. These implications include PE certification, state registration, PEs employed by the facility, completion of testing, and site visits.

PE certification. An owner or operator of a facility is required to secure a PE certification of its SPCC Plan and any *technical* amendments to the Plan. Through certification, the PE attests that the SPCC Plan has been prepared in accordance with good engineering practice, and that the PE considered applicable industry standards in preparation of the Plan. An important implication for the certifying PEs is the PE's attestation. Previously the EPA did not require attestation that the PE considered industry standards. In the final rule the EPA specifically included it as an element of the attestation. The EPA further noted that part of good engineering practice "will include that appropriate provisions of applicable codes, standards, and other regulations, be incorporated into the SPCC Plan for a particular facility." PEs sealing SPCC Plans that meet this new attestation will need to incorporate a discussion and demonstrate the implementation of applicable codes, industry standards, and other applicable regulations in the written Plan. If the codes and industry standards are not applicable the PE is required to state this in the Plan and explain why they are not applicable.

The EPA has always considered that the regulations required SPCC Plans to be prepared in accordance with good engineering practice. The final rule clarifies that PE certification is not required for *non-technical* amendments to the SPCC Plan that do not require engineering judgment, such as telephone numbers, names on a list, some — but not all — product changes, and any other changes not requiring engineering judgment. Furthermore, the PE's certification of the SPCC Plan means that the facility's equipment, design, construction, and maintenance procedures used to implement the Plan are in accordance with good engineering practices.

State registration. The EPA solicited comments on the advantages and disadvantages associated with the certifying PE being registered in the State in which the facility is located. Comments were made that "a requirement that a PE be licensed in the State in which the facility is located would allow the state licensing board to more easily address the actions of the PE under its jurisdiction, and that the PE may have greater familiarity with the state and local requirements related to the facility under review."

The EPA adopted the position that it is unnecessary that the PE be registered or licensed in the state in which the facility is located because the SPCC program is national in scope and therefore expertise in state requirements is unnecessary. While many states may prescribe more stringent requirements than the EPA, a PE must familiarize himself/herself with any particular requirements a state may impose and address them in the Plan.

The EPA left any PE practice issues with the jurisdiction of state licensing boards. For example, according to most state licensing law and rules, if the certifying PE is not registered in the state where the facility is located, the PE is proscribed from practicing in that state. However, when a state licensing law and rules provide for an industrial exemption and the PE employee of the owner of the regulated facility qualifies for the exemption, applying an out-of-state seal to the certification may raise problems state-by-state depending on the unique laws and rules governing the industrial exemption.

PEs employed by the owner. Concerns with potential conflict of interest or the appearance of a conflict of interest that could arise by allowing an employee of the owner of the regulated facility to certify its SPCC Plan was raised in the EPA solicited comments. It was questioned whether the rule should specify that the certifying PE not be an employee of the owner of the regulated facility or have any direct financial interest in the facility. If this concept were carried to the extreme, this would suggest that no in-house engineers could do engineering for their employers without being in conflict of interest. In Louisiana and other states, conflict of interest in engineering practice is well covered in the licensing boards' rules rendering this issue moot.

The final rule does not contain the provisions requiring a third-party, independent PE to certify the SPCC Plan. The EPA believes that most PEs, whether independent or employees of the owner of the regulated facility, being professionals, will uphold the integrity of their profession and only certify SPCC Plans that meet regulatory requirements. Indeed, an in-house PE may be the person most familiar with the facility.

Completion of testing. The EPA originally proposed that the PE must attest that required integrity testing was completed. However, the final rule only includes the requirement that the PE certify that the procedures for inspections and tests have been established. The certifying PE only shares responsibility with the owner or operator for establishing procedures, not for their implementation and performance, which is the sole responsibility of the owner or operator. However, a schedule for testing with specific time frames for the completion of that testing is required to be included in the Plan.

Site visits. The EPA has always maintained that a site visit is necessary, but the revised rule allows an agent of the PE to visit and examine the facility in place of the PE. However, the PE must review the agent's work, and certify the SPCC Plan. An agent might be an engineering

(Continued on Page 22)

Philip B. Curwick, PE, the Vice President for Parker & Associates, Inc. in Baton Rouge, earned his BS degree in Civil and Environmental Engineering from the University of Wisconsin-Madison in 1980 and has 16 years experience in government and in private practice.

Tips on choosing a financial advisor

By Blaise J. Ernst

More Americans own stocks, bonds and related forms of investment than ever before. However, despite this growth many investors are not comfortable making major financial or investment decisions on their own. Some may feel they lack sufficient knowledge to make a well-reasoned decision, while others may be discouraged by some of the technical language used by the investment community. Even though the Internet makes it possible to access tremendous amounts of financial and business-related information, it cannot help those who do not have the time, talent or inclination to sift through it all.

With the countless investment opportunities available today, it is no surprise that many individual investors prefer the convenience and peace of mind offered by hiring a personal financial advisor. But, given the tremendous expansion in the number of financial service providers over the past decade, how and where should you start? Herein is offered some basic tips that may simplify your search for a professional financial advisor.

Why choose a professional?

One important reason for having a professional advisor is to help protect you against spur of the moment or emotional investment decisions that might not be appropriate for you. For example, you may be given an inside tip from a family member or friend or hear some disquieting news on a business broadcast and be tempted to react without further investigation. The impartial advice of an investment professional can help you to avoid purchases or sales based on such impulses. Having your advisor explain the reasoning behind his or her recommendations, you will gain a greater overall understanding of how changing market conditions can affect the value of your portfolio.

How to begin

Although it may seem complicated, the process of selecting a financial advisor should be no more difficult than that used to choose the other professionals in your life — your doctor, lawyer or accountant. Above all, do not take the easy way out and just pick a name at random from the phone book or other form of advertisement. Some investors prefer to rely on the recommendations of relatives or co-workers. Although convenient, such recommendations may be based more on subjective personal feelings rather than on an impartial evaluation of money management skills.

As an alternative, you can contact a nationwide professional financial planning organization and ask for a list of members who live or work in your area and begin your search from there. But, before contacting any of them, you will need to decide the extent of their probable responsibilities. Will you be hiring an advisor just to create an overall investment strategy that you intend to carry out on your own? Or, will you prefer that he or she take full responsibility for putting your strategy into effect?

Professional qualifications

First, each of the candidates on your list must have the professional qualifications necessary to competently manage your investments. Although an advanced degree in finance or accounting is not a necessity, some kind of formal financial training is. And, as in any profession, the more experience each candidate has the better. A candidate's firsthand knowledge of previous economic downturns would be especially valuable, in that it can generally help maintain a proper sense of perspective during periods of unusual economic activity.

In many states, professional financial planners must pass a standardized regulatory exam before being allowed to practice. In addition, those wishing to sell securities or insurance must hold appropriate state licenses to do so. The department of securities regulation in your state, as well as the National Association of Securities Dealers (NASD), can provide you with a list of licenses held by your candidates.

One professional accreditation you are likely to discover is as a Certified Financial Planner, awarded by the Certified Financial Planner Board of Standards to advisors with at least 3 years of work experience in financial planning. Successful applicants for this designation must complete an approved course of study, pass a financial planning exam and meet certain other educational and ethical requirements. Other titles you may encounter include Chartered Financial Consultant, Certified Public Accountant, Chartered Life Underwriter and Registered Financial Consultant, each of which carries its own set of professional requirements.

Narrowing the field

Although professional qualifications are an absolute necessity, do not base your hiring decision solely on degrees or titles. After reducing the candidates on your list to a manageable number of say 4 or 5, request their resumes and make an appointment to meet each of them face-to-face. This would be the appropriate time to ask about any fees charged for services.

Conduct each of these "getting acquainted" sessions as if it were a job interview. As a prospective employer, you are looking to hire the best person you can afford for the very important job of managing your investments. Ask each candidate the same list of questions and then compare their answers. Even though every investor has his or her own unique concerns, your list should at least include the following:

- Are you a registered investment advisor?
- How long have you been in the business?
- Can you provide references?
- Do you focus on selling certain financial products?
- Is your basic investment philosophy conservative, moderate or high risk?
- How are you compensated — flat fees, commissions or through a combination of both?

At the end of each interview, ask yourself if you personally "clicked" with the candidate. This will not be nearly as easy to quantify as a list of investment philosophies or professional qualifications, but make a note of those advisors who seemed genuinely interested in you. For example, were you asked specific questions based on what you were saying? Even if you are investing only a modest amount of money, your questions should have been answered clearly and completely, without the use of jargon-filled shortcuts. Determining which of your candidates provide the best "fit" may take some time, but it is time well spent.

After you choose

Once you have done your homework, studied your notes and made your choice, it will be your turn to be interviewed. Your advisor will want to know your long- and short-term financial goals and will ask about your income, assets and tolerance for risk. If he or she will be selling stocks and bonds on your behalf, will your express permission will be required for every transaction? Of course, you can always grant your advisor discretionary trading authority, but this should generally be avoided — at least until a track record of acceptable results is established for your portfolio.

You are not done yet!

Even after you have hired the financial advisor of your choice, you cannot afford to just sit back and become a completely passive investor. Ideally, you should meet with your advisor once a quarter or at the very least once a year to review your portfolio and discuss your financial concerns. This opportunity can also be used to discuss recent market conditions and any significant changes that may have taken place in your investment goals. In the interim, if you experience a major life event, such as the birth of a child, loss of a spouse or dramatic change in income or asset level, you should meet with your advisor as soon as you can.

Finally, remember that your right to information regarding the investments contained in your portfolio is absolute. And, as long as all applicable fees, penalties or tax liabilities are satisfied,

(Continued on Page 22)

Blaise J. Ernst, Associate Vice President, Financial Advisor, is with Morgan Stanley in Covington, Louisiana (985) 893-7772 or (888)893-2743. *This article does not constitute tax advice. Individuals should consult their tax or legal advisers before making any tax-related investment decisions. Any particular investment should be analyzed based on the terms and risks as they may relate to your circumstances and objectives. Information and data in this article were obtained from sources considered reliable and published for general information purposes. Their accuracy or completeness is not guaranteed and the giving of the same is not to be deemed a solicitation on the part of Morgan Stanley with respect to purchase or sale of securities or commodities.*

❖ Quote ❖

The history of road building covers many centuries . . . Roman builders . . . used large blocks of stone or slag to construct all-weather roads (circa 100 BC) . . . (In) the 17th and 18th centuries, French and British builders used compacted layers of broken or crushed stone. Although the service environment of such early roads cannot be compared to today in terms of traffic volume and . . . loading, it is nonetheless significant that many early roads still exist . . . their longevity is often credited to the ingenious use of drainage techniques that minimize the long-term presence of water in the substructure.

Despite the long history and obvious benefits of providing subsurface drainage, (it) has not been included in modern roadway design and, generally, is regarded a primary factor in premature deterioration.

- David E. Beck, PE
CE News, February 2002

- Observation -

The Roman engineers may have accidentally designed and built roads that have survived 20 centuries in service by simply applying what they apparently learned from experience, that the subsurface drainage of the pavement preserves the subbase and roadbed materials from softening and deteriorating due to long-term moisture retention. Drawing on the same experience Modern era engineers have designed and built roads that have lasted 200 years. American engineers built one of the largest Modern public works projects in the world — the Interstate System — intentionally designing and building its pavements to last only 20 years without subsurface drainage, and that saves little material or effort.

Service history may be a significant factor in a relatively temperate climate like Louisiana's where the high speed passage of heavy vehicles eventually fails and erodes the pavement supporting soils out from under the pavement. Louisiana got about 30 years of service out of its 20-year design. However, in the less temperate climate of the northeast and midwest, the water retained in pavement-supporting soils freezes in the winter and causes frost heave. The experience there with one undrained pavement section that was never brought into service was that it became nearly impassable in 7 years due to the deformations caused by the frost heave. In this climate, the service environment contributed by the traffic is rendered nearly meaningless.

In general, I believe that using an undrained pavement design except where the facility is planned to be removed from service at the end of its 10- to 20-year service life cannot be justified as cost-effective for any important arterial highway or in any high volume traffic situation. The only other possible exception is on paper where figures lie and liars figure.

I believe that the idea or notion of the perpetual pavement being espoused in some sectors of the asphalt paving industry — whether it is really consistent with this theme or not — is correct. They have it right to build a perpetual supporting structure with a renewable wearing surface. With effective infrastructure management practice and a responsive preventive maintenance program, a design to last somewhere between 200 and 2000 years would seem to be practical and good enough to be considered perpetual to me. - *Editor*

(Continued from Page 20)

technician, technologist, engineer-in-training, or other person qualified to prepare preliminary reports, studies, and evaluations after visiting the site. The PE, after reviewing the agent's work, could then legitimately certify the SPCC Plan.

Additional Issues

There are several contentious issues in the final rule that are being hotly disputed in industry forums and for which the EPA has promised to provide further guidance. Some of these issues are presented, with an explanation. However, it is not possible to anticipate which issues will be resolved and what form their resolution will take. Be aware that the items listed may be subject to change as — and when — further guidance from the EPA becomes available.

Security. The final rule requires that the owner or operator

- fully fence each facility handling, processing, or storing oil, and lock and/or guard entrance gates when the facility is not in production or is unattended.
- ensure that the master flow and drain valves and any other valves permitting direct outward flow of the container's contents to the surface have adequate security measures so that they remain in the closed position when in non-operating or non-standby status.
- lock the starter control on each oil pump in the off position and locate it at a site accessible only to authorized personnel when the pump is in a non-operating or non-standby status.

Since the current SPCC rule uses the word *should* with regard to these requirements, many certifying PEs have been exercising a professional prerogative not to require valves, dispensers and pumps to be secured in facilities with 24-hour operations and/or with a full perimeter fence.

Wastewater Treatment Facilities. The final rule does not apply to any facility or part thereof used exclusively for wastewater treatment, and not used to satisfy any requirement of the SPCC rules. The production, recovery, or recycling of oil is not wastewater treatment for purposes of the final rule.

Although wastewater treatment plants at many facilities recover oil as an incidental part of the wastewater treatment, the EPA has unofficially stated that an NPDES-permitted wastewater treatment plant will not be subject to SPCC requirements. Therefore, the oil recovery capability of such a treatment plant cannot be considered secondary containment for otherwise uncontained tanks or transfer operations. Furthermore, the rules appear to imply that non-permitted oil/water separators may now be subject to SPCC requirements.

Container Volume. The final rule does not apply to any container with a storage capacity of less than 55 gallons of oil. PEs must ensure they account for 55-gallon drums when figuring SPCC applicability in preparing Plans.

Oil-filled Equipment. The EPA has clarified its opinion that using oil, may subject a facility to SPCC jurisdiction as long as the other applicability criteria apply. Facilities that use oil operationally include electrical substations, facilities containing electrical transformers, and certain hydraulic or manufacturing equipment. Oil-filled equipment, such as electrical transformers, must meet SPCC requirements, for example, the requirements to provide appropriate containment and/or diversionary structures to prevent discharged oil from reaching a navigable watercourse.

Periodic Integrity Testing. Owners or operators must test each aboveground bulk oil storage container for integrity on a regular schedule, and whenever material repairs are made. Testing on a regular schedule means testing in accordance with the industry standards selected by the certifying PE or at a frequency selected by the certifying PE that will prevent discharges of oil. The frequency and type of testing must take into account container size and design. The owner or operator must combine visual inspection with other testing techniques, for example hydrostatic, radiographic, ultrasonic, acoustic emissions, or other non-destructive methods for shell testing.

The extent of inspection is normally prescribed by a specific industry standard, such as American Petroleum Institute Standard 653 or the Steel Tank Institute Standard SP001-00, from which the certifying PE may select to meet the integrity-testing requirement. The owner or operator must keep comparison records and also inspect the container's supports and foundations. Most facilities have no records of any testing other than visual inspections.

Conclusions

The recently published Federal final rule for Oil Pollution Prevention has raised new issues and implications for PEs that prepare and certify SPCC Plans. This article is intended to address some of these issues and implications from the PEs perspective. As the final rule becomes implemented in August 2003, it is crucial that the PEs involved stay abreast of forthcoming EPA and/or State interpretations. Additional information, interpretation, and guidance concerning the final rule can be found at www.epa.gov.

(Continued from Page 21)

you have the right to withdraw your money whenever and for whatever reason you choose.

To find out more

In today's increasingly complicated business and investment environment, having a professional financial advisor is no longer a luxury. It is rapidly becoming a necessity. For more information on how professional investment advice can help you to make the most of your capital, please contact us.

EDITOR'S JOURNAL

By James C. Porter, PE

Victim of a conference

I had just returned from a 2-day engineering conference completely exhausted. In past years, when I attended conferences I selected and attended only the technical sessions that truly interested me and spent the rest of my time networking with vendors, friends and fellow engineers. Now with the urgent need to attend all of the available technical sessions to meet the continuing professional development requirements to sustain engineering licenses, I discovered the chronic problem with most technical sessions by attending those that I would otherwise not attend for lack of any particular interest in the past. They bored me to distraction and often to unsuccessfully fighting off sleep.

The vital interest I had in the selected sessions I had exclusively attended previously kept me awake. Now, however, my lack of particular interest accentuated by dark meeting rooms and droning, monotone-voiced speakers hidden in that dark or partially hidden behind haloed podiums reading from notes was taxing my consciousness more effectively than an overdose of sleeping pills. It occurs to me that computer-generated projection media and its predecessor, photographic slide projection media used to methodically project the outline of a presentation in this format, is boooooooring! This typical unengaging method of presentation has apparently always depended on my dedication and/or vital interest to sustain attentiveness or consciousness.

Of the e-mail messages that had backed up slightly during my 2-day absence, one was the National Society of Professional Engineers' new service. It provides a summary of late-breaking news items from various sources that may be of interest to engineers. The most poignant title appeared in the list, "Effective Presentations: How to Keep Computer Projection from Sucking the Life out of Your Presentations." It appeared in the February 2002 issue *CE News.* I planned to read it based on these transfixing points in the summary:

- The focus should be on the speaker — not the visual aids
- Relying on visual aids to do most of the work detracts from helpful speaker/audience interaction and
- This reliance is risky because of potential equipment failure.

Ineffective presentations include

- turning off the room lights — Yes!
- staying behind a computer or lectern
- using a laser pointer unless using a large screen
- presenting a nonstop visual aid show and
- communicating from/with the screen rather than to the audience.

Effective projection presentations

- large type size, pictures and contrasting colors
- light text on a dark background — more legible in lighted room
- provide a visual template or theme to maintain conformity
- enhance the presentation rather than replace the presenter and
- have a hard copy backup in the event of computer failure.

The full article added some important points touting the promise of computer projection software such as PowerPoint. If it is used effectively, it must follow the UR rule and must

- help the audience understand your message

or

- help them remember a point

Using computer projection effectively with the creative possibilities of incorporating high tech graphics, still photos, audio and video clips can

- enhance your professionalism
- give you purposeful movement and
- serve as your notes.

I would strongly recommend that conference planners provide strong guidance to prospective presenters and facilitate it with audio/visual equipment and the conditions that allow presenters the mobility to walk right into the audience with ease if they wish. Also they should provide projection capability that does not require even dim lighting so presenters can be animated and make eye contact with the audience. As a victim desperately seeking relief from vacuous methods of presentation, I can only recommend that extemporaneous presentation or at least intermittent, extemporaneous outbursts by speakers should be encouraged. For this, I can live without the obligatory jokes at the beginning and the end of a presentation that sandwich pure tedium.

Is intuition a legitimate resource?

If engineers are as notoriously left-brained as some evidence would suggest, intuition — a phenomenon more associated with right-brain activity — may be a cultivated personal asset into which engineers regularly tap whether or not it is realized. More specifically, the intuition referred to here is...the power or faculty of attaining direct knowledge or cognition without evident rational thought and inference...or...quick and ready insight...Students of engineering are taught to consciously analyze and solve problems in a systematic, thorough and logical way. They are not taught to solve problems in an intuitive way.

Experience suggests that the tried and true, conscious and methodical process without applying any intuition results in providing conventional engineering services that usually, if not always, lead to a successful conclusion. As the principles of probability that apply to engineering work would suggest, the reality is that a small risk of failure exists even when the conventional and appropriate processes are followed with the proper standard of care. This should logically lead to the appreciation that there are always unavoidable risks present in engineering work and therefore there is no reason to allow one's confidence in it to soar to absolute certainty. Understanding this may provide some amount of comfort for the uncertainty that may be associated with applying or at least acknowledging the role of one's intuition as a personal and professional asset in the pursuit of engineering work.

Engineers typically build an experience base through repeating the conventional problem-solving processes for a variety of progressively more complex problems over time. When coupled with other life experiences that may seem unrelated, this experience base can lead to a valid intuitive inspiration through subconscious thought when the spirit is willing and receptive, and the opportunity presents itself in the problem-solving process. The intuition cultivated through experience and usually viewed as a right-brain asset is openly associated with — and applied to — aesthetic, interpersonal and other right-brain endeavors as opposed to logical and analytical deliberations as applied to engineering, scientific and other left-brain endeavors.

For one who is a pronounced left-brained individual, it appears on the surface to be more than a stretch to consciously rely with any confidence whatsoever on some hocus pocus such as intuition or a gut feeling to make a critical decision on which the safety and health of many and the general success of an engineered work would largely depend. It is suspected that prior to the Industrial Revolution, when engineering practice was mostly founded in empiricism and learned through apprenticeship as opposed to being founded on scientific principles learned through formal education, reliance on intuition — conscious or unconscious — must have been a significant part of engineering practice and the uncertainty associated with its application.

The tube structural system and its analysis now used routinely in the design of the tallest buildings such as the 1700-foot-tall Sears Tower in Chicago (circa 1973) is an important innovation developed by the late Fazler Kahn in the 1960s. It substantially reduces the amount of material needed to support tall buildings compared with that required by more conventional frames and their analysis. The very idea of the tube structural system surely must have been the result of the exercise of considerable intuitive inspiration. But the analytical approach to this conceptually different structural system is based on a purely scientific analysis and justification. I suspect that it represents the same intuitive inspiration that probably led to Hardy-Cross developing the moment distribution analysis in the late 1920s. This one of several relaxation methods developed by Hardy-Cross provided the means to more accurately analyze building frames that are many degrees redundant and avoid the need for high speed computing not available at the time. This quantum leap in technology gave

(Continued on Page 24)

Anyone who works in engineering plan production knows that it takes a great deal of energy to keep plan production and administrative work on schedule, to keep the costs in line — make a profit — and then to keep current with the standards and practice in engineering. Apparently there are engineers who intentionally do not keep current but devote near undivided attention to meeting production goals. After all, that's where the money is. This is when opportunities occur for ongoing quality to suffer. The added costs and risks in this practice can be passed on to the customer in the form of inefficient or ineffective designs, and inconsistent safety and health standards due to the application of outmoded standards. Hence, there is the apparent need for watchdogs like the Louisiana Fire Marshal's office to enforce the competent application of the fire code.

In the magazine, *Structural Engineer,* I was recently amazed that its readers — practicing structural engineers — are in a heated debate over the use of the allowable stress analysis (ASA) versus the load and resistance factor analysis (LRFA) used in the design of buildings. I had expected that the ASA, mistakenly adopted — there was a choice then between working stress and strength analysis — as the standard practice near the turn of the last century, would for apparent and good reasons be relegated to the technological bone yard in the early 1960s when LRFA correctly emerged as the current and appropriate technology. Yet, many engineers persist in using ASA and defending the indefensible.

I suspect that the old folks who graduated before the early 1960s continued to use the ASA they were taught rather than convert to the LRFA. They likely imposed the ASA method on those who came to work under them though they were taught LRFA. These converts in turn appear to have imposed the ASA method on another generation perpetuating the use and irrational support of an outmoded technology over more than two generations of structural engineers.

I suspect this continued use of the ASA emanated from some combination of stubbornness, laziness and lack of commitment or willingness to invest in and maintain current technological competence. Certainly the ASA cannot be supported on superior technological merit. The ASA is a dead technology that should have never been given birth. Its perpetuation is founded entirely on the perverse attitudes of the engineers who persist in using it and not on the rational thought that engineers are perceived by the lay community to notoriously over-exercise.

It is disturbing to me that an organization like the American Concrete Institute gives an air of legitimacy to the ASA method by carrying it as an alternate method in the appendix of its Structural Concrete Building Code ACI 318 specification though it has admittedly not been regularly upgraded to be consistent with current research — the epitome of a dead technology. Plans are finally afoot to remove the alternate method in the 2002 version of ACI 318 eliminating an important pretense justifying to continue to use the ASA.

I remember, I stayed in hot water with one of my supervisors in my early days in structural design because I devoted what he considered an inappropriate amount of my time and energy — and that was any at all — to discovering what was new and different out on the horizon of our technology long before it evolved and became standard specifications and practice. I was also in hot water for investing my time in automating time-consuming routine manual analysis processes. This was long before proprietary software became so ubiquitous for these applications. In my estimate, these efforts — studying and moving the boundaries of one's technological competence and productivity — were a significant part of the essence of my professional development.

On the other hand, I was lucky that the size of our design staff was large enough to absorb my mischievousness with a level of production that was not seriously impacted by my brief lapses in contribution to project work. Our typical design staff member justifiably took great pride in producing plans for conventional bridges exceptionally well yet they never seemed to question the conventional processes they used. However, they were quick to recognize the benefits of effective changes in the conventional processes when they were presented and they eagerly adopted them. All I can say is, bless their pointy little heads because I suspect that if I had been working with a smaller or like-minded design staff or for a private company instead of the government and billable time or productivity suffered at all, I would have been fired in those days if I had persisted in devoting a portion of my time and energy to keeping current and seeking ways and means to push the envelope to be more productive.

The mandated, acceptable processes of achieving continuing professional development as imposed by the engineering licensing board in Louisiana is, in my opinion, unnecessarily rigid, expensive and a hugely ineffective use of one's time, energy and resources. However, for the motives expressed herein, it is surely right on target. It clearly acknowledges that it is appropriate and necessary for a modicum of time and energy to be invested in continuing education and professional development by every engineer. I remain unapologetic in my criticism of the bean counting methods used to assure that professional development occurs in appearance, if not in fact, for every licensed engineer in Louisiana. Because of my personal experience, I am impatient with — and indeed aggrieved by — the ineffective use of my time and resources to conform to a time-consuming process that contributes so little to what I need to invest in effective continuing education and professional development.

(Continued from Page 23)

added confidence in the design and construction processes of tall buildings such as the 1450-foot-tall Empire State Building (circa 1931).

The solution to the more complex problems typically assigned to the experienced structural engineer may be in fact uniquely characterized to some degree as being reliant on the intuition. It may require — for example — an instinctive anticipation or expectation of the behavior of a relatively unconventional structural system. This anticipation or expectation of behavior is as good as the instinct honed through a depth of understanding that is gained through the experience of solving progressively more complex, conventional problems.

The application of the ubiquitous, black box, computer-generated solution gives results that are only as valid as the assumptions applied to the boundary conditions and the application modeling it uses. Axiom: In its effective use, engineering software can support but cannot replace the intuition. The same can be said of the engineer's experience. Because unconventional structural systems may not easily fit directly into the analytical methods or models immediately available, the intuition can serve as well as — if not in tandem with — direct knowledge to fathom their feasibility and effective use and to anticipate results. The development of a new or different technological model may be necessary to effectively analyze and justify the reliability of an unconventional structural system if those available are deemed infeasible. In this vein, it is suspected that Fazler Kahn's conceptual development of the tube structural system was the result of intuitive inspiration that may have begun as part of a deliberate and conscious effort while using a feasible computer-generated solution.

Intuition can play an important role in the quality of decision making particularly in a typical situation where the best choice from among alternatives is not clear yet a choice must be made without enough information to clearly identify the best choice. Given the comfort that all the choices are from among feasible alternatives that can be scientifically analyzed and justified, being open to the application or at least to the influence of one's intuition would seem to be acceptable. This is the application of the intuition to supplement decision making with incomplete information upon which to make the best choice clear. It is no more than the instinctive, unconscious exercise of one's own intuition or instincts with or without a conscious awareness of the process.

Other than the proficiency gained through experience to more efficiently and effectively process conventional engineering work, it would appear that the ability to effectively apply one's intuition or instincts cultivated through engineering and other life experience is a second important asset. This may distinguish the value of the experienced engineer from that of the less experienced engineer less open to — and confident in — cultivating and applying the intuition.

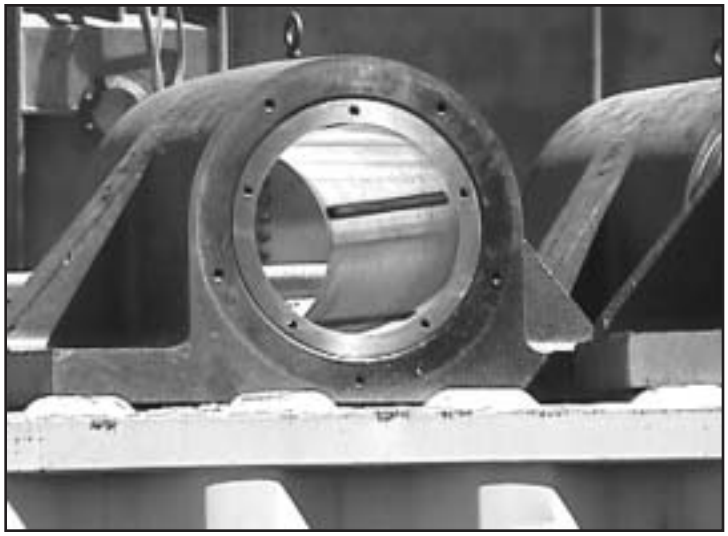


Figure 5. (d) View of the trunnion sleeve bearings for the bascule span of the temporary bridge.

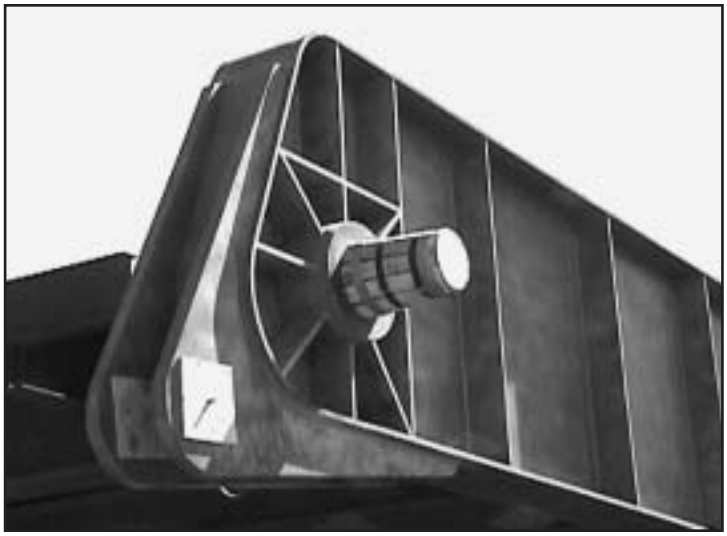


Figure 5. (e) View of the pivot plate bearing assembly with the trunnion shaft to be received by the trunnion sleeve bearings — two per girder.

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the specifications. There were improvements in all areas. The loads, load factors and load combinations, for instance, have been clarified and, in my view, the ambiguities and inconsistencies that previously existed have been eliminated.

Detour bridge

A single leaf bascule bridge with an overhead counterweight was designed and constructed for the detour bridge as shown in Figures 4, 5(a), 5(b) and 5(c). Prior to this project, most movable detour bridges consisted of either a new or salvaged pontoon bridge. With no existing pontoon bridges available, it was decided to pursue a relatively new design concept for a movable detour bridge. Cost estimates showed that the single leaf bascule bridge would be slightly more expensive than a new pontoon bridge. However, when the salvage value was considered, we were swayed favorably in the direction of the bascule.

The detour bridge was necessarily located on the site adjacent to the bridge to be replaced and on the opposite side from a railroad bridge that is adjacent to the construction site. See Figures 4 and 6 showing the location of the railroad bridge and a second view of its structural configuration.

The application of this bascule bridge configuration was being tested in service in Florida on a slightly larger scale at the time the plans were being developed to use it as a detour bridge on the Bayou Carlin bridge site. It has also been used in Europe on a smaller scale. To meet the existing 45' horizontal clearance for navigation, a 70' bascule span was used. It has a 28' clear roadway, and it is composed of two longitudinal steel girders and cross framing members that support an open steel grid deck. The span is supported and pivots about one end on trunnion bearings and it is balanced by the overhead counterweight assembly. The overhead counterweight assembly is connected to the span by four 3" round steel rods with a 50ksi yield strength. There are two 14" hydraulic cylinders powered by a 50 horsepower electric motor that actuate the bridge from reaction points located near the span's trunnion bearings. The span was assembled on a barge and floated into position for final erection.

The concept for the design of the bascule bridge is straightforward but as with most new concepts, there were some rather complex details that had to be worked out. The design of the large trunnion sleeve bearings for the span shown in Figure 5(d) and its counterweight assembly were unique as were the pivot plate/bearing assemblies shown in Figure 5(e), and the movable bridge traffic railing system. The bridge was designed using the 1988 AASHTO Standard *Specifications for Movable Bridges* [Ref. 3] as amended through 1995. The structural analysis and three-dimensional modeling were performed using the STADD software and all loads and specifications applied as though it were to be a permanent installation. This turned out to be a prudent decision considering what will be the final disposition of the bridge.

The original intent was for the bridge to be partially dismantled, relocated, and reassembled as a detour bridge at other sites upon the completion of the Bayou Carlin bridge. However, once its design was completed and it was fabricated and erected, it was concluded from the experience that a more rational use of the detour bridge would be a permanent location. The major factor contributing to this decision was the magnitude of the substructure that would be sacrificed each time the bridge is moved. At this time, final plans are underway for a permanent relocation of the detour bridge as an off-system bridge replacement on Bayou Teche at Vita Shaw in Iberia Parish. We are very confident this bridge will serve the needs of this community for many years.

Challenges and lessons learned

This synopsis is not intended to cover every problem encountered in the construction of the Bayou Carlin replacement bridge but just a general overview of the problems encountered that were considered most significant. Reference 5 provides a detailed account of the problems including case studies and the remedial actions taken, from a mechanical engineering perspective.

Pile driving

A major problem was encountered early in the pile driving operations. Even though it is not deemed a problem to be associated particularly with the innovative design elements in the Bayou Carlin bridge, it is a problem for any vertical lift bridge — or any movable bridge — with less room for compromise in the foundation location and layout. This exacerbated the nature of the problem. As pile driving progressed away from the channel on the main bridge piers and continued to approach bents after the completion of the construction of the detour bridge and the permanent operator's house, unexpected movement of previously driven piles took place. The movement of the piles supporting the main piers was toward the channel. This resulted in the displacement of the main piers and shortening the length of the lift span stringers to fit the location of the displaced piers. This was accomplished after the fabrication of the lift span stringers but before they left the shop. The movement of two piles supporting the operator's house was upward, causing damage to the new house that required leveling and repairs.

This phenomenon, although observed occasionally in the past, caused numerous problems because the cast-in-place concrete footings for the substructures had been cast on their supporting piles simultaneously with the remaining pile-driving operations. In addition, the foundations for the detour bridge, the operator's house and main bridge piers were in relatively close proximity to each other. This, in itself, was not considered that usual insofar as foundation construc-

(Continued on Page 26)

Figure 7. (a) Honeycombing in reinforced concrete tower column pour.

Figure 7. (b) Honeycombing in reinforced concrete tower column pour.

(Continued from Page 25)

tion is concerned. In future projects of this nature, more attention will be given the sequence of pile driving.

Concrete placement

The concrete forming and pouring operations for the cast-in-place concrete tower columns yielded much less than the desirable and expected results. This had major ramifications throughout for the planned installation of the mechanical equipment. The feasibility, challenges and significance of obtaining plumb and square concrete tower columns sufficient for the operation of a lift span had been internally discussed at length. However, this need may not have been adequately communicated to the contractor through the specifications and through the other means and opportunities available during the project.

It was well understood that construction within the tolerances required for the effective assembly of the mechanical equipment for the operation of the movable span was achievable. However, everyone involved seems to have underestimated the contractor's level of awareness and appreciation of the need and the extra effort that would be required for satisfactory performance in achieving the specified tolerances during construction. The contractor submitted an alternate method of attaching the span and counterweight guides to the tower columns that helped offset the out-of-plumb columns. The accurate positioning of the sheave and trunnion assemblies and the other machinery, however, was more of a challenge but it was all dealt with one problem at a time and adequately resolved.

There are clear concerns about the necessity of the tower columns being plumb and square for this type of construction. Of particular concern is the expected level of care believed to be necessary and how that squares with the contractor's prerogative to establish the method used to obtain the specified accuracy in the finished product. For future projects, it has been proposed that the layout and alignment of the mechanical systems be developed as independently as possible from the accuracy of the erected tower columns and the machinery platform dimensions. That is — they will be independently referenced to control points of known locations such as the centerline of the roadway and the absolute elevation.

Concrete quality

Proper techniques in vibrating plastic concrete to obtain adequate consolidation in the tower column concrete appear to have been neglected early on. One partially constructed tower column was required to be completely removed due to extensive honeycombing of which examples are shown in Figures 7(a) and 7(b). The problem occurred more than once but to a lesser degree in the other locations such as the machinery platform support beams.

Who would have ever predicted that the forms for our first vertical lift bridge with concrete towers would catch fire. Yes! It happened. Cutting torches were used to remove the steel and wood false work connections and components supporting the machinery platform concrete pour. Apparently, not enough precautions were taken to extinguish all the resulting embers before the forms were removed. This resulted in one of the machinery platforms receiving major fire damage when the forms burned unabated for several hours during the night. The height of the fire above the ground presented a challenge for local fire fighters and the equipment they had available. After a full assessment of the damage, the decision was made to repair and not replace the fire damaged areas. The typical fire damage to the concrete is shown in Figure 8(a) and the fire damage to the removed forms is shown in Figure 8(b).

More concrete placement

Initial indications show that the amount of concrete in the deck pour may have been as much as 22 percent over the plan quantity. There will likely be a continuing debate over the exact cause of a thicker and heavier deck slab. A review of the structural components supporting the deck showed no structural deficiencies as a result of the extra weight. However, the effect on the supporting mechanical components was not as certain. As it turns out, the trunnion was the controlling element in assessing the remaining factor of safety for the mechanical equipment design. After several attempts at estimating an accurate weight of the span, it was decided to weigh the span using jacks. Upon weighing the span, it was determined that the heaviest corner could be over the design weight estimate by 12 to 13 percent. Further research into the matter ultimately proved that the original design for the trunnion — including the factor of safety — was adequate.

It is my opinion that a major contributing factor to the thicker deck was the method selected for pouring the span. The relative vertical deflections in the lift span stringers supporting the concrete deck included a component caused by the simultaneous deflection of the end lift girders that are suspended at each end by the cables. This substantially complicated predicting an accurate screed setting. The contractor poured the span in the open position as shown in Figures 9(a) and 9(b) making temporary shoring of the end floor beams so difficult he elected not to shore them. However, shoring — though difficult — is believed to be practical. The lift span could have been erected and its deck poured in the closed position allowing for easier shoring of the floor beams. This is not always practical since there can be serious and maybe unacceptable consequences for the prolonged obstruction to marine traffic during the erection of the lift span for a low-level vertical lift bridge followed by the pouring and curing of its concrete deck while in the closed position. This would have to have been decided prior to fabrication of the end floor beams since the plans were developed with a non-composite dead load component in the camber diagram. The construction of the counterweights suspended from the machinery plat-

Figure 8. (a) View of fire damage to reinforced concrete under the machinery platform deck. Note the depth of exposure of reinforcing steel chairs (see inset).

Figure 8. (b) View of the partially burned form work once it was removed from the structure.

forms with the span in the closed position can also be a significant challenge. For future projects involving a similar floor arrangement, the contractor's method of pouring the span will likely be specified in the plans. This, however, is a direct contradiction of the philosophy of the very popular initiative referred to as performance-based specifications.

Steel fabrication

When under self-weight and before the deck is cast on them, the lift span stringers are cambered upward to compensate for the non-composite dead load deflection of the concrete deck. After the deck is cast and its dead load is applied, they deflect down to their final position as estimated in the plans. The ends of the lift span stringers were cut vertically compensating for their end rotation under their self-weigh only. After their attachment was made to the vertically oriented end floor beams, the deck was cast causing the additional component rotation of the lift span stringer ends. The end lift girders tilted out of their initial true vertical position. This in itself was not a structural problem but it did cause problems with the mechanical systems dealing with the span guides, the span locks and the buffers. It also was a major issue for the clearance between the bottom flange of the tilted end lift girders and the support walls for the adjacent approach spans. In the end, it was decided to remove the concrete support walls and recast them to provide the necessary clearance to the movable span. This is a predictable structural phenomenon that was not a result of a new design concept. Several people reviewed the shop drawings prior to fabrication and erection stages yet no one picked up on this essential detail.

Summary

The Bayou Carlin bridge construction project as a whole was deemed a success with intermittent and in some cases serious torment. There was a lot to learn and I believe that everyone involved learned a lot. It is appropriate to mention the previously referenced paper again at this point [Ref. 5] and recommend it to anyone wanting a more detailed explanation of the complex mechanical problems this bridge presented and how they were solved. Its authors reveal their inspiration for writing the paper as coming from a book, *To Engineer is Human* by Henry Petroski [Ref. 6]. The following quote is from the paper: "In this book, Mr. Petroski describes the great strides in engineering design made possible through the knowledge gained from catastrophic failures. In fact, the main point of the book is to illustrate that we can learn much more from our mistakes than our successes." I plan to read this book.

The vertical lift bridge with concrete towers is no longer just an abstract concept. Another vertical lift bridge with concrete towers is cur-

(Continued on Page 28)

Figure 9. (a) Reinforced concrete deck pour with the span suspended in the open position. Note location detour alignment and detour bridge.

Figure 9. (b) Reinforced concrete deck pour with the span suspended in the open position. Note the counterweight partially supported on deck.

PROFESSIONAL LISTINGS

(Continued from Page 27)

rently under construction and yet two others are in the final design stage as we learn and build on our practical knowledge with each experience.

Acknowledgments

A special appreciation is expressed for the following members of the Louisiana DOTD team for their persistent dedication, hard work and forbearance in making this project a success and a practical education for all involved. The team members from the Bridge Design Section were Ray A. Mumphrey, PE, Kian L. Yap, PE, and Steward P. Hingle, PE; and the team members from District 03 Construction were Jerry P. Begnaud, PE, and Jeffrey M. Faust, PE.

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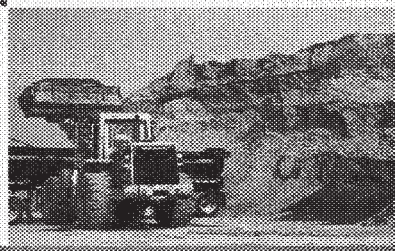

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