THE LOUISIANA CIVIL ENGINEER

ACADIANA BRANCH • BATON ROUGE BRANCH
NEW ORLEANS BRANCH • SHREVEPORT BRANCH
Journal of The Louisiana Section

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Barbara E. Featherston, PE
Section President 2003-2004

PROFESSIONAL LISTINGS

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Development:	Susan Blodgett	6008	sblodgett@asce.org
Processing and Retention:	Curtis Nunley	6198	cnunaly@asce.org
Member Benefits:	Terri Dove	6072	tdove@asce.org
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THE LOUISIANA CIVIL ENGINEER

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Norma Jean Mattei, PE, *Chair* (504) 280-5414
James C. Porter, PE, *Editor* (225) 242-4556

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The Louisiana Section is located in ASCE Zone II, District 14. Zone II consists of Districts 6, 7, 9, 10 and 14. District 14 consists of the Louisiana, Mississippi, Alabama and Georgia Sections.

President's Message

Barbara E. Featherston, PE

I am sure that every year the new President of the Section sits down and ponders, "How am I going to write a President's message long enough to fill that page with a 9 point type text?" For those of you who typically do not read this page, it is just as new to me as its writer. This is my maiden run at it and I will try to share with you my thoughts and philosophy concerning the important issues that face the civil engineering profession today and at the same time make it as enlightening an experience as is possible.

It is imperative that I immediately discharge some very important obligations. On behalf of the Section, I would like thank Charles L. Eustis, PE, Past President, and the remainder of the 2002-2003 Section Board for a wonderful year. Things ran quite smoothly under Charlie's leadership and we got a lot accomplished. I am optimistically hopeful that this administrative year will go equally as well. May I also express my appreciation to you for electing me and thereby giving me the opportunity to serve as the President of the Section. I am anxiously looking forward to serving this year with our elected leadership.

It was not that many years ago that I first served on the Section Board as one of the Directors. As President of the Shreveport Branch, there were a few folks I knew from Shreveport that were serving on the Section Board in various capacities. I did not know anyone else on the Board. That year provided a huge learning curve for me to master. I became more familiar with *Roberts Rules of Order*, how the Board operated and what the Section spent its money on. I began to see how the Board supported activities on the branch level, particularly in the areas of public relations and communications, and how the Board communicated with the ASCE national organization. These are the two areas that left a lasting impression on me at the time and they are what I would like to focus on emphasizing and possibly improving this administrative year.

The first area of interest is public relations and communications. One of the primary issues in the ASCE has been how to support and stimulate public awareness of what we do as civil engineers and how what we do impacts daily lives. Most folks take for granted civil engineered facilities such as roads, water systems, buildings and sewer systems. The problem is that the public expects these facilities to be there and to work right all of the time because for the most part they do work with great reliability. When they fail to work, that is when civil engineers and the civil engineering profession usually get noticed.

It is not often you would expect to hear someone say, Wow! What a great road, or Mmm! This water tastes wonderful. How about never... Fortunately we as a profession have been doing better at informing the public about the importance of our work and how it supports the very backbone of our country — its infrastructure. Since 9/11 the public has come to keenly appreciate how vital our infrastructure is to our civilization and how vulnerable it can be to terrorist attack. I recently watched with my whole family a few hours of the series "Extreme Engineering" that was programmed on The Discovery Channel. In recent years we have seen more programs on television that demonstrate the significance of engineering. I believe that this does wonders for us all — engineers and public alike.

On the Section and branch level, I believe that we have been doing wonderful things in the area of public relations for the civil engineering profession. The branches have developed and aired radio and television advertisements, made book donations to public schools, provided classroom education and done many other great things to enhance public understanding of civil engineering. The Section has helped promote and sponsor these programs by providing additional funds to supplement the funds it received in State Public Affairs Grants from the ASCE national organization. This work appears to have been very effective and I believe that it needs to continue to be expanded.

Another important component of the Section's public relations and communications effort is the Section's website. Work on the website started a few years back. After a few minor setbacks, it is now up and operational and it contains a huge amount of information about the Section including its Operating Guide, our *work in progress.* We plan to continue to work on the website to expand its content and its quality in many new areas that will provide benefits to our members.

My second area of emphasis is effective communications — *receiving and sending* — with the ASCE national organization. It would appear that there are national efforts and acts that significantly impact the rank-and-file ASCE members and they seem to pass without notice among many of them. This ties in with the Section website and *The Louisiana Civil Engineer*, the quarterly journal of the Section, as a means to get such information out to the members. The monthly national publications, *ASCE News* and *Civil Engineering* and the ASCE national website provide substantial information about national issues from the national perspective. This means that getting the information out is the easy part. The hard part is perusing and assimilating this information in the first place and getting the attention of the rank-and-file Section members.

I would like to increase and enhance the Section's communications with the ASCE national organization. We need to gain early awareness of issues, and develop and provide effective communication and input on the issues that affect our members and encourage their direct participation in the process. The current issues that concern me most are Policy Statement 465 and the proposed changes to the governance of the ASCE national organization. If you have been reading your copy of *Civil Engineering* at any time during the past year and had occasion to read the letters to the editor, it is obvious that the ASCE members feel very strongly and often differently about the educational requirements proposed as being needed for engineering licensure and the requirements to maintain engineering licensure.

There is a lot of information about Policy Statement 465 on the ASCE national website. I strongly encourage you to become well informed on this issue. The Section leadership, will continue to obtain and disseminate information to better inform its members. It is important that the ASCE national organization receives effective input not only from the leadership of the Sections, Districts and Zones, but from individual members expressing their opinions as they have done in *Civil Engineering* magazine. Because of the expressed opinions and concerns, the whole issue regarding education for licensure requirements has been pushed out of the background into the foreground. What started as a required Master's degree is now a Master's degree or *equivalent.* It is possible that the content of the *equivalent* may become more crucial to one's practice than the Master's degree. These significant changes in concept have become part of the evolution of the substance of Policy Statement 465 into a more palpable and competent statement of educational needs for civil engineers.

Another national ASCE issue that the Section leadership is following closely and that has been discussed in the Board meetings and in general membership meetings during this past year is the proposed amendment to the ASCE Constitution on governance. I will not go into great detail here on the subject. The proposal basically reduces the number of members on the national ASCE Board of Directors from 34 down to less than 20 and streamlines the zone and district organizations. Please check it out on the ASCE website, it provides a lot of information on the subject. Based on what I have read, it is my opinion that there is still a lot of work to do and a lot of serious concerns that will need to be addressed before this proposition should be put to a vote of the general membership.

I believe that the Section leadership needs to do a much better job of communicating with our constituent members. We have a great quarterly journal and we have a nifty new website. Now

(Continued on Page 8)

The lift-slide drawbridge: An innovation

By Rex J. King, Jr., PE

Movable bridge needs

According to information from the Federal Highway Administration's data, there are approximately 892 movable bridges in the United States' National Bridge Inventory and on the public roads in the United States. According to Federal Highway Administration's National Bridge Inspection Standards, approximately 589 or 66 percent of these movable bridges are either structurally deficient or functionally obsolete. This data does not consider the need for movable bridges in new locations.

Economic issues

The cost to construct or reconstruct a movable bridge can easily exceed the cost of a comparable fixed bridge meeting similar design parameters by 3 to 6 times. For example, a bascule drawbridge recently constructed in Miami, Florida — the Second Avenue drawbridge — costs approximately $44 million while a comparable fixed bridge without the vertical navigation clearance requirements would have cost approximately $10 million. Another example is the vertical lift drawbridge under construction in Houma, Louisiana — the Daigleville Bridge. It costs approximately $6 million dollars while a comparable fixed bridge without the vertical navigation clearance requirements costs approximately $1.5 million. Because of the high costs of movable bridges, many communities cannot afford to replace their existing, deficient movable bridges or to construct new movable bridges on navigable stream crossings where needed.

The *low-level movable bridge crossing* is the most common application for movable bridges and the substantial part of the discussion herein. A low-level movable bridge alternative will typically have the lowest construction cost and the highest daily operating costs in terms of power consumption and manpower required. Low-level movable bridge crossings necessarily expose the movable span to collision damage by the most massive components of marine vessels that are nearest to the water surface. This results in high economic losses due to severity of the damage and loss of service for the months that are necessary to effect emergency repairs.

The *high-level fixed bridge crossing* is an alternative to the low-level movable bridge crossing. Due to its height above the water — the vertical clearance required over the navigation channel — the high-level fixed bridge requires the construction of substantial substructures and costly approach structures making this alternative typically a more expensive alternative to construct than a low-level movable bridge. A high-level fixed bridge normally takes substantially longer to construct than a low-level movable bridge and it can permanently disrupt a community separated by a navigable waterway.

The *semi-high-level movable bridge crossing* combines a movable bridge with longer approaches to the semi-high-level crossing. It combines some of the higher construction costs of the high-level fixed bridge with the ongoing operating costs of a low-level movable bridge, making this alternative usually the most expensive. An intersecting high volume marine channel and high traffic volume highway facility in an urban environment, where limiting the frequency of bridge openings to accommodate only the larger vessels and a limited length of approach structures is acceptable, this configuration becomes feasible by the unique conditions if not economically the best alternative considering user costs.

Construction issues

With the prevailing traffic conditions in most communities, shutting down an existing route segment on the public street system for 2 to 4 years to reconstruct a movable bridge is generally unacceptable. The aforementioned Second Avenue drawbridge in Miami, Florida, took over 2 years to construct. Similarly, the Daigleville drawbridge in Houma — expected to be completed by January 2004 — will have taken nearly 3 years to construct.

For the Daigleville drawbridge, there has been at least one petition filed by frustrated businesses and property owners concerned about its lengthy construction time. While construction time for movable bridges may be expedited as much as it is possible, it is not uncommon that unanticipated, additional construction time is required to deal with unexpected problems associated with the complex nature of the design and construction of the conventional movable bridges.

History

Conventional movable bridge types

In his history of movable bridges, titled *Remember the Past to Inspire the Future — Historic Development of Movable Bridges*, John A. Schultz, Jr., SE, reveals that the modern versions of the three conventional movable bridge types — namely the vertical lift, bascule and swing drawbridges — are 19th century developments. Each of the conventional movable bridge types features a unique movement including vertical translation, vertical rotation and horizontal rotation respectively.

One may ask, why did these bridge movements become standards? From a review of bridge history and given 19th century technology, bridges with these three movements were the easiest to construct, the most cost effective and the most reliable to operate. It appears that once these three standards were available, the 19th century spirit of movable bridge innovation may have faded into simply updating and improving on the three standards.

Retractable drawbridge

The *retractable* drawbridges — also referred to as the *traversing or sliding* drawbridge — has been designed and constructed in the past. However, it never gained the broad acceptance of the conventional moveable bridge types — vertical lift, bascule and swing drawbridges. A reason the retractable drawbridge did not come into common use is explained by F. C. Kunz, CE in his book, *Design of Steel Bridges — Theory and Practice for the use of Civil Engineers and Students*, 1915, in Chapter XIV on Movable Bridges and Turntables page 275. He writes,

> A traversing bridge is not desirable as it requires more power than any other kind and is slow of motion. It has been used in only a few cases for railroad bridges, but has proved satisfactory for small highway bridges.

Given the technology of 90 years ago, the retractable drawbridge was apparently not a technically or economically competitive choice. However, it is believed that the two disadvantages expressed by Kunz — excessive power consumption and a slow operation — can be effectively overcome through invention and using current technology. This will be discussed later in more detail.

Existing limitations

There are design requirements that tend to make the conventional movable bridge types — vertical lift, bascule and swing drawbridges — expensive to build. To operate and move the movable spans to a position that provides the required unobstructed navigation clearances, the conventional movable bridge types typically require components of their structures to be larger and/or more complex than would otherwise be required of the comparable fixed bridge necessary to span the navigation channel and accomplish the intended traffic carrying purpose.

Rex J. King, Jr., PE, is President of King & Associates LLC, Civil, Structural and Consulting Engineers, which he founded in 2000. He earned his BS in Civil Engineering in 1993 from Louisiana Tech University. A licensed professional engineer in Louisiana — King has planned and designed numerous civil and structural engineering projects in Louisiana and he is the inventor of the lift-slide drawbridge — patent pending — and the variable load counterweight system — patent pending — the subject of his article. King is currently President of the Bayou Chapter of the LES and a member of the ASCE, LES, NSPE and other engineering-related organizations.

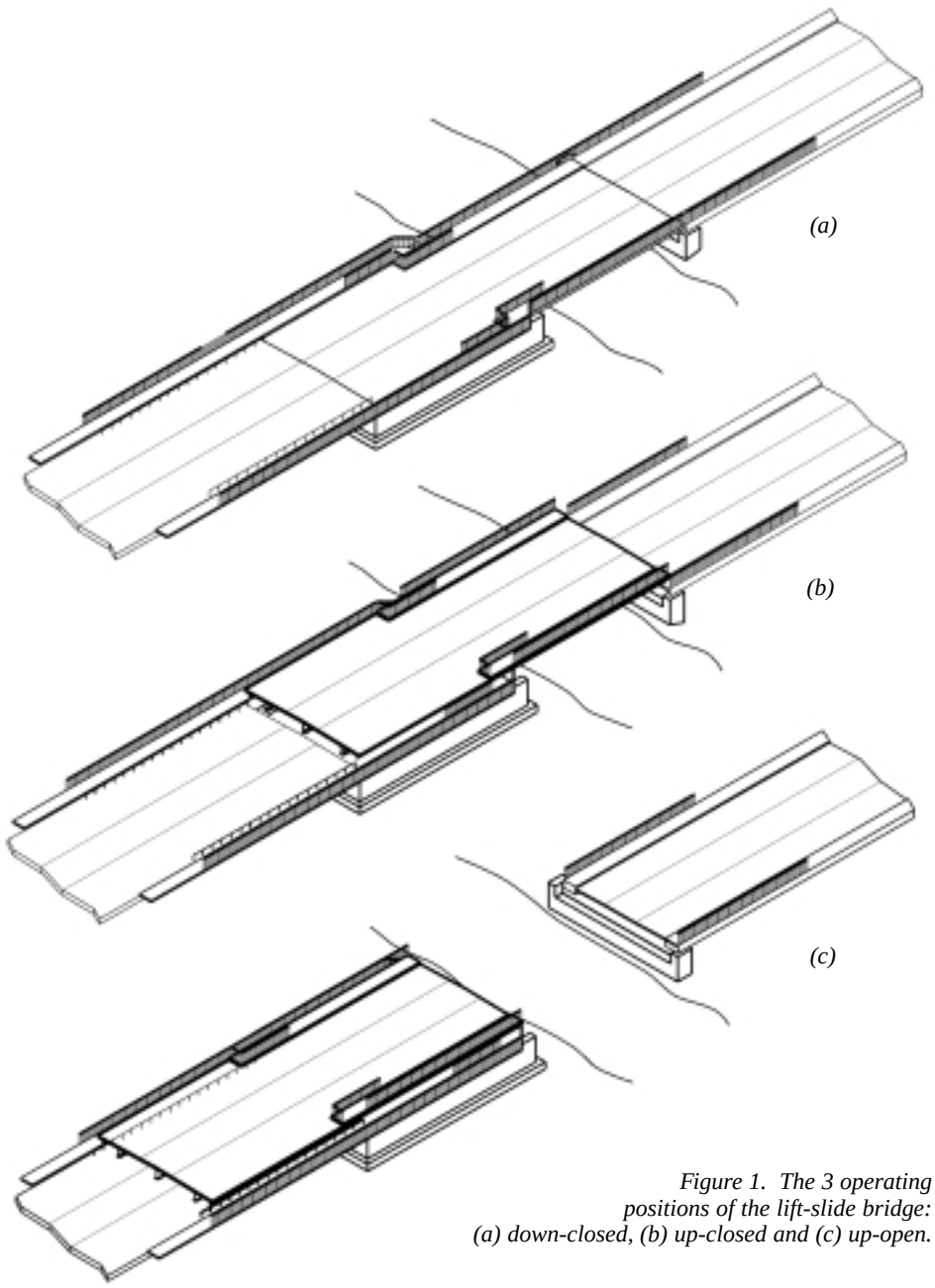

Figure 1. The 3 operating positions of the lift-slide bridge: (a) down-closed, (b) up-closed and (c) up-open.

The *vertical lift* drawbridge requires the movable span to be translated vertically enough to provide for the maximum vertical navigation clearance required above the water. To do this, it requires an expansive and massive superstructure to support the span, counterweights, sheaves, cables, and power and control equipment to lift the movable span typically 50' to a 100' or more vertically. This superstructure is very expensive to build.

The *bascule* drawbridge requires the movable span — a bascule leaf — to be rotated vertically up and away from the navigation channel to provide the maximum horizontal navigation clearance and unlimited vertical navigation clearance. Depending on the depth of a bascule girder, the distance between piers supporting the bascule girder is typically greater than what is necessary to meet the maximum horizontal navigation clearance. Live load resistance provisions — particularly for a double leaf bascule drawbridge — and the counterweight configuration typically result in a massive pier required to support a bascule span.

The *swing* drawbridge requires the movable span to be rotated horizontally parallel to — and out of — the navigation channel to provide the maximum horizontal navigation clearance and unlimited vertical navigation clearance. The swing span rests on a *turntable* or *pivot* pier for which its center and the center of rotation of the span typically coincide and it must be horizontally offset from the edge of the navigation channel by more than half the width of the movable span. This is necessary to locate the movable span outside of the navigation channel when in the opened position. As a result, a swing drawbridge superstructure and substructure are oversized to meet the offset and operation requirements. Wider roadways require greater offsets and therefore greater size for the turntable pier and length of movable span for the swing drawbridge. Because of the required offset, swing drawbridges are normally best suited for relatively narrow spans or those providing for fewer traffic lanes. Of the conventional movable bridge types, the swing span drawbridge requires the most right of way in which to operate the movable span.

Innovation

Considering the opportunities that may be available in the use of 21st century technology, and the specific needs of highway transportation and the nature of highway transportation facilities today; it is suggested that it may be the right time to — as Shultz's title suggests — *Remember the Past to Inspire the Future.* It may be time to rekindle the 19th century spirit of movable bridge innovation by leveraging 21st century technology to address the functional and economic needs of the 21st century.

Goals

Every movable bridge location has its own unique site parameters that require consideration in the design. When reviewing initial design and construction costs, construction time, maintenance and operations costs, and safety issues both during and after construction, it appears that the costs for every movable bridge project has the potential to be reduced substantially through innovation in movable bridge design. For this reason, it is reasonable that an innovation in movable bridge technology should be sought outside of the three conventional movable bridge types. Such an innovation should provide a high quality facility that can be constructed, operated and maintained easily; provided at a significant cost savings; and constructed in a minimum time.

Could there possibly be an innovative movable bridge design that may be equal to or more effective than the time-tested conventional movable bridge types and yet draws on the knowledge base developed for them? If there is such a type of movable bridge, it most likely would be discovered through the aforementioned tenet, *Remember the Past to Inspire the Future,* and in doing so, the best conventional features would be extracted. The effectiveness of any type of movable bridge measured against the conventional movable bridge types is in the context of true practical worth *relative* to

- cost to design and construct
- time to construct
- cost and speed of operation
- cost and frequency of maintenance and
- general safety concerns.

In his book titled, *Design of Steel Bridges — Theory and Practice for the use of Civil Engineers and Students,* 1915 in Chapter XIV on Movable Bridges and Turntables page 273 F.C. Kunz, CE, writes

> It is impossible to give any general rule as to which kind of bridge is best adapted in a certain case, as there are many factors to be considered. The following general principles should be observed:

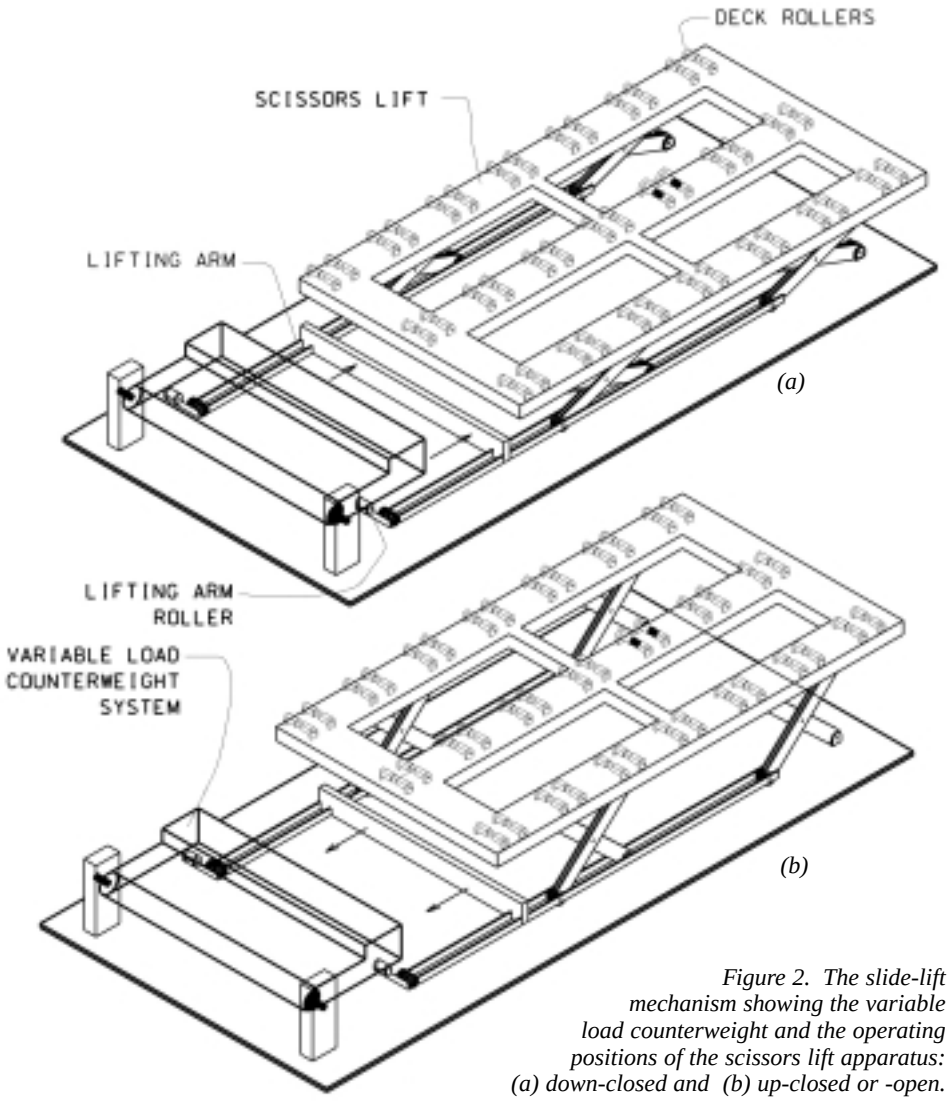

Figure 2. The slide-lift mechanism showing the variable load counterweight and the operating positions of the scissors lift apparatus: (a) down-closed and (b) up-closed or -open.

(1) When the bridge is closed it should be as nearly as possible a fixed span.
(2) The machinery should be designed so that the bridge can be easily operated while moving. The most simple design which gives the least first cost and cost of operation is the best.
(3) The structural and machinery parts of the bridge should be separate; that is, when the bridge is closed, acting as a fixed span, the machinery parts should not receive any stress.

Lift-slide drawbridge

The economic and construction issues experienced with the conventional movable bridge types suggest that there may be a niche for a lower cost movable bridge type. It is proposed that a retractable drawbridge innovation, *the lift-slide drawbridge* — patent pending — may offer a lower cost alternative to the conventional movable bridge types. Its principal benefit appears to be reducing the construction costs by an estimated 30 to 50 percent, making movable bridge projects more affordable. Some broad goals achievable with this simple, innovative drawbridge design are

- free up millions of transportation dollars to fund additional, badly needed highway transportation projects
- accelerate the construction process reducing construction time to a year or less and
- allow opportunity for improvement in movable bridge operation, maintenance and safety.

The lift-slide drawbridge with a unique *variable load counterweight system* — patent pending — was conceived to meet the above goals in addition to incorporating the best features and avoiding the disadvantages of the conventional movable bridge types. The anticipated features of the lift-slide drawbridge are

- a high quality, safe highway bridge
- rapid and simple operation
- accessible components for safe and easy maintenance
- low maintenance requirements — as a fixed span, machinery parts do not support loads
- can be maintained while in service
- can be constructed without disrupting marine traffic
- can be constructed safely and quickly
- unlimited vertical clearance for marine traffic
- structure is well protected from damage by marine traffic
- is scalable in width so that it can be designed to accommodate one to six lanes of traffic
- is scalable in length so that it can accommodate a horizontal navigation clearance up to 150' and perhaps more
- is scalable in duty so that it can be designed to accommodate light or heavy-duty traffic
- can be built inexpensively (scalability in width, length and duty makes it possible for a drawbridge to be sized to meet the needs of a location with a resultant substantial cost savings)
- can be built within existing or minimal right-of-way, and
- the structure is attractive, low profile and would be welcome in any neighborhood.

Invention

The main components of the lift-slide drawbridge invention include

- the movable or retractable span
- the lifting apparatus in the lift-slide mechanism,
- the variable load counterweight system in the lift-slide mechanism and
- the sliding apparatus in the lift-slide mechanism.

The anticipated advantages of the retractable drawbridge previously discussed can be realized with the development and deployment of the lift-slide drawbridge described. The lift-slide drawbridge design will be a simple, yet rapid operating, retractable drawbridge. By providing a short initial vertical lift of the retractable span to clear the adjacent bridge approaches, the conflict between them is avoided. The lifting of the heavy retractable span led conceptually to an energy efficient and cost effective scissors lift apparatus assisted by a variable load counterweight system. The resulting reduced power consumption expected allows the use of smaller motors for the system with overall cost savings. The power consumption for operating the lift-slide drawbridge is expected to be similar to — or possibly less than — that for the conventional movable bridge types.

Unlike the conventional movable bridge types, the lift-slide drawbridge operation will not generally require components of their structures to be larger and/or more complex than would otherwise be required of the comparable fixed bridge necessary to span the navigation channel and accomplish the intended traffic carrying purpose. This is because

- the operation of its movable span is within its plan limits
- the open position for the movable span that provides unobstructed navigation clearances coincides with the approach spans
- the substructure components will be approximately the same size as that required for a fixed bridge and
- the movable span components will be approximately the same size as that required for a fixed bridge.

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News from the Branches

BATON ROUGE

By J. Keith Shackelford, PE, President

Troy Bunch, Director of the East Baton Rouge Parish Planning Commission, was the guest speaker during the September Branch membership meeting and luncheon. His topic, "Urban Design and Growth Centers," was a timely one in the Baton Rouge community considering that community leaders in the Baton Rouge area recently visited Austin, Texas to discover how the leadership in the City of Austin promoted and managed its substantial growth. The City of San Antonio, Texas has been through a similar growth earlier than the Austin experience.

The election of Branch officers was held during the September Branch membership meeting. A motion was made from the floor to close the nominations and accept by acclamation the slate of nominees as presented by the Branch Nominating Committee. The motion passed unanimously. The elected Branch officers and Branch Board of Directors for the 2003-2004 administrative year are:

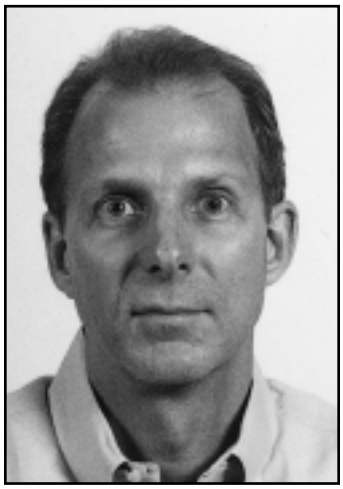
- David M. Burkholder, PE, President
- André M. Rodrigue, PE, President Elect
- Thomas T. Roberts, PE, Vice President
- Brant B. Richard, PE, Secretary/Treasurer
- Jesse T. Thompson, EI, Director
- Gregory P. Sepeda, PE, Director
- Stephen M. Meunier, PE, Assoc. Director
- J. Keith Shackelford, PE, Past President

The newly elected officers will be installed during a ceremony planned for the October 16th Branch membership meeting.

Our guest speaker scheduled during the October meeting is Dietmar Rieschier who is the Director of the Amite River Basin Commission. Dietmar will update us on the status of the Comite Diversion project including the work already begun on the Lilly Bayou Drop Structure.

The Branch Program Committee has completed the tentative scheduling of luncheon speakers for the Branch membership meetings planned for coming year. The entries marked with an asterisk are tentative at this time. The schedule is as follows:

11/20/03	Hurricanes Isabell and Lilly, Mark Levitan
	Project Visualization, Brian Wolshon (PDH presentation)
12/2/03	Branch Christmas Party at Bocage Racquet Club
1/15/04	Centroplex Expansion, Skipper Post*
2/04	Engineers' Week (no meetings scheduled)
3/18/04	Louisiana Transportation Research Center, Bill King* (related PDH presentation)
4/15/04	Bobby Simpson, Mayor of Baton Rouge
5/20/04	PE and graduate education, George Z. Voyiadjis, PE Structural Design, Dean McKee * (PDH presentation)
6/17/04	Kam K. Movassaghi, PE, Secretary DOTD
8/19/04	Lauren Scott, Secretary DEQ * (environmental PDH presentation)
9/16/04	Sewer Program update, City-Parish DPW
10/24/04	Mayoral candidate debate *



David M. Burkholder

André M. Rodrigue

Thomas T. Roberts

Brant B. Richard

Gregory P. Sepeda

Stephen M. Meunier

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we need to be able to develop high quality information and find effective ways to encourage more member interest and participation in developing national and section issues. I believe that the only way to do this effectively is to work very closely with the branch leadership to provide and discuss the information that they need to best serve their members in making decisions regarding ASCE issues including proposed policies and programs. We need to facilitate enlightenment concerning the issues and encourage feedback over the full span of the Section including its branches and its individual members effectively communicating with the ASCE national organization on several levels.

NEW ORLEANS

By Christopher G. Humphreys, PE, President

The Branch Board is off and running with the new slate of officers and directors that were installed by ASCE President, Thomas L. Jackson, PE, during the Section Annual Meeting and Awards Banquet that was hosted by the Branch September 12, 2003. The officers and directors serving on the Branch Board are

- Christopher G. Humphreys, PE, President
- Deborah D. Keller, PE, President-Elect
- William H. Sewell, Jr., PE, Vice President
- Christopher L. Sanchez, EI, Treasurer
- Ronald L. Schumann, Jr., PE, Secretary
- Peter R. Cali, PE, Director
- Nathan J. Junius, EI, Director
- Daniel L. Bolinger, PE, Past President

On behalf of the officers and directors of the Branch, I would like to state that we are all very proud to be civil engineers and honored to have the opportunity to serve the ASCE. We are committed to maintaining the outstanding level of service that our members and the engineering community have come to expect from the Branch. This is no small commitment when you consider the quality technical seminars previously conducted throughout the years by our technical committees, the support provided to the University of New Orleans and Tulane student chapters, the community outreach efforts extended throughout the year, and most particular the outstanding Louisiana Civil Engineering Conference and Show that continues to grow in substance and popularity.

The 2003 Louisiana Civil Engineering Conference and Show jointly sponsored with the Louisiana Section of the American Concrete Institute was held September 11th and 12th at the Pontchartrain Center in Kenner, Louisiana. The 2003 conference was the largest ever and a huge success due to the interest of the civil engineering community, the exhibitors and sponsors and the high quality of the technical sessions programmed. The Conference is becoming a statewide event with registrants from New Orleans, Baton Rouge, Lafayette, Lake Charles and Shreveport. The technical sessions presented at the conference allowed licensed engineers to receive up to 12 professional development hours at a very reasonable cost. The session topics covered many areas of interest including civil, structural, environmental and geotechnical engineering, design codes, surveying, and ethics.

The evening following the conclusion of the Conference the Branch hosted the Section Annual Meeting and Awards Banquet in Metairie Country Club facilities. The installation of the officers and directors serving on the Section and Branch Boards of Directors was part of the program. This meeting was attended by approximately 70 members and their guests.

The Conference continued to be a success because of the efforts of a dedicated committee chaired this year by Deborah D. Keller, PE. The Conference committee meets regularly for 11 months and it collectively puts in hundreds of hours of volunteer work to produce the high quality conference we have come to expect over the past 13 years. Members of the 2003 Conference committee are

- Gustave S. "Gus" Cantrell, PE, Exhibitors/Accounting
- Stephen C. Bourg, PE, Registration
- Norma Jean Mattei, PE, Exhibitors/Door Prizes
- Frank C. McCaskell, PE, Website and Publicity

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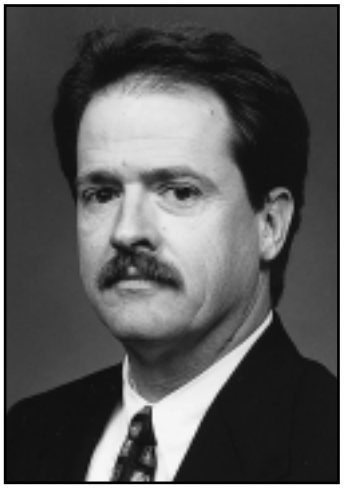


Christopher G. Humphreys

Deborah D. Keller

William H. Sewell, Jr.

Ronald L. Schumann, Jr.

Christopher L. Sanchez

Nathan J. Junius

Peter R. Cali

Daniel L. Bolinger

ACADIANA

By John E. Bosch, Jr., PE, President

After the summer layoff, the Branch kicked off the 2003-2004 administrative year with a very successful September Branch membership meeting. Charles L. Eustis, PE, President of the Section, installed the new Branch officers who are:

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

Following the installation ceremonies, Larry Cramer gave a farewell speech and handed the gavel to John Bosch symbolizing the passage of the office to the newly installed President. The Branch truly owes a debt of gratitude to Larry Cramer for his active involvement in the ASCE over the past several years and particularly for his very effective leadership as its President.

The Board has set the following goals for the Branch this administrative year:

- participate in the 2004 Career Connections Expo for 10th graders — exposes the students to careers in civil engineering
- continue to donate books about civil engineering to the schools in the Branch area
- continue to promote public awareness of civil engineering in the community, and
- sponsor a spring seminar.

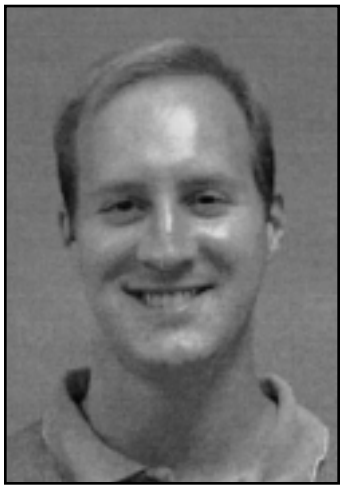
In August of this year, the Branch continued its program of distributing books about civil engineering to parish school systems libraries in the Branch area. The recipient of these books was the Iberia Parish school system. Branch Board members Jeff Duplantis, Public Relations Committee Chair; and Larry Cramer, President, attended the August 20, 2003 meeting of the Iberia Parish School Board to present the books titled *The Art of Construction* by Mario Salvadori, and *Building Big* and *Underground* by David Macaulay. The Branch plans to continue to annually donate books about civil engineering to a selected parish in the Branch area until there are enough books to cover all of the elementary and middle schools in the Branch area.

As many of our members are aware, the Branch sponsors a two-day spring seminar in the years the Branch does not host the Section Annual Spring Meeting and Conference. The Board is now in the initial stages of selecting a topic for the spring seminar. Any member who has a suggestion for a topic to be presented during the planned seminar, please advise a Board member.

❖ Quote ❖

Licensure: *One potential change to the licensure model which seems to be getting almost unanimous support is offering all technical exams required for licensure during or immediately after university studies. Most stakeholders think that the Principles and Practice of Engineering exam is largely academic in nature...*

- J. Richard Cottingham, PE
NCEES President



John E. Bosch

Kimberly D. Landry

Dax A. Douet

Mohammed J. Khattak

Jeffrey L. Duplantis

Larry A. Cramer

–Oberservation–

Licensure:

The concession that the Principles and Practice of Engineering examination does not represent and never represented the engineering technology learned during the four years of engineering internship comes only after more than 20 years of debate over the obvious. If this was not clearly reason enough, I suspect that the thinking and unspoken motive now is that the PE examination together with the Fundamentals of Engineering examination can and ultimately will serve as a comprehensive outcomes assessment exam for the engineering curriculum of each engineering discipline tested, just as the Fundamentals of Engineering examination alone is planned for an outcomes assessment of the core engineering curriculum. - Editor

SHREVEPORT

By C. Eric Hudson, PE, President

I hope everyone had a great summer and enjoyed a special vacation with their families away from the office. I am very honored to have been elected to serve as Branch President for this administrative year. The Board has already made a clear commitment to providing the best service possible to the Branch during our tenure. The members of the Branch Board for the 2003-2004 administrative year are

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

The Branch will host the Section Annual Spring Meeting and Conference at the Sheraton in Shreveport March 18-19, 2004 and the Board is planning to make the effort to see that this conference is successful. To this end, the participation in — and support of — this effort by Branch members is vital and will be actively sought. To begin at the beginning, it is most important that a program of technical sessions be planned and solicited that provides useful information for a broad spectrum of practicing civil engineers. The best source for identifying such pertinent technical sessions is the potential customers. So all Section members are encouraged to contact any Branch officer with recommendations for potential seminar topics and speakers. Please mark your calendar and plan to attend.

The next Branch membership meeting is scheduled for November 20th. The program for this meeting is being planned at this time.

The October Branch membership meeting was a joint meeting with the Shreveport Chapter of the Louisiana Engineering Society. It was a well attended meeting housed in the Louisiana Technology Transfer Center. Leslie K. Guice, PE, with Louisiana Tech University gave an interesting presentation titled "Engineering and Technology Entrepreneurship."

Lisa Nichols and I attended Louisiana Tech's annual Burger Burn September 16th in Ruston. The Burger Burn is an annual event organized by the Louisiana Tech Student Chapter and the Branch supports the event by funding its supplies. There were about 60 students in attendance and the hamburgers were tasty. All-in-all, the Burger Burn was a wonderful success.

The September Branch membership meeting was housed in the Petroleum Club. Neal Shearer with Insituform Technologies, Inc. gave an excellent presentation on pipe rehabilitation.

The annual Spring Classic Golf Tournament at Olde Oaks Golf Club was a great success. Through the support of the participating Branch members and their companies the Branch managed to raise enough money to fund two $500 scholarships for Louisiana Tech civil engineering students.

C. Eric Hudson

Kirt M. Nixon

Lisa Nichols

Ashley T. Sears

(Continued from Page 9)

- William H. Sewell Jr., PE, Treasurer
- Harry W. Stinchcomb, Jr., Catering and Banquet
- William W. Gwyn, PE, Sponsors
- Thomas M. Smith, PE, ACI Co-Chair
- Ryan C. Koeing, Technical Program and Speakers

Plans for the 2004 Conference will begin soon. The Conference committee that has done such a great job over the past several years will largely remain intact under the leadership of the 2004 Chair, William H. Sewell, Jr., PE. The 2004 Conference is scheduled for September 9th and 10th in the Pontchartrain Center in Kenner, Louisiana.

Although the Conference is the Branch's premiere event each year, the Branch will hold monthly membership meetings where guest speakers make presentations on topics of interest to the membership. Our first Branch membership meeting will be a luncheon October 29th at Commanders Palace. The speaker for this meeting is Dom Izzo, PE, with DMJM+Harris. He will discuss the ASCE National Roundtable deliberations about America's Wetlands which will have been held in New Orleans October 16th and 17th. This event will have key decision making representatives from federal and state agencies along with leaders from the consulting engineering and educational research communities. Dom's presentation to the Branch will be a summary report of the ASCE's position and current efforts on this subject.

The Branch technical committees also develop regular technical seminars throughout the year. These technical committees are chaired by

- Mark H. Gonski, PE, Structures Committee
- William W. Gwyn, PE, Geotechnical Committee
- H. Davis Cole, PE, Environmental Committee

The outreach committee, chaired by Norma Jean Mattei, PE, plans several outreach efforts throughout the year including a booth at the New Orleans Jazz and Heritage Festival that offers civil engineering based activities that are age appropriate and fun for kids. The Branch will continue providing judges and prizes for the Greater New Orleans Science and Engineering Fair. In addition, the Board is currently considering plans to once again sponsor radio announcements that will increase public awareness of civil engineers and civil engineering throughout the Greater New Orleans area.

Our Younger Member Committee, chaired by Benjamin M. Cody, PE, plans several social outings including some with the local student chapters and with the senior members of the Branch. We are proud of the efforts of this committee to organize volunteer house repair efforts in association with the Volunteers of America Safety of Seniors Programs. This year the Committee plans to increase these efforts with more Habitat for Humanity projects.

Information on all Branch activities can be found on our branch website www.asceno.org that is also set up to allow online registration for seminars and conferences. The website is maintained by Frank C. McCaskell, PE.

In closing, I would like to thank the officers, directors, committee chairs and the members of the Branch for their support. My association with the leaders in this outstanding group is truly rewarding and I am honored to serve as the Branch President for 2003-2004 administrative year. It is my goal to maintain the high standards of service and technical development opportunities that our members have come to expect from the Branch.

Structures Committee

By Mark H. Gonski, PE

During the past year the Committee added a new member, Thomas M. Smith, PE. Smith is also very active in the Louisiana Section of the American Concrete Institute. The Committee elected its new leadership and officers for the 2003-2004 administrative year. They are as follows:

- Mark H. Gonski, PE, Chair
- James R. Danner, Jr., PE, Treasurer
- Paul H. Zeihl, Vice Chair
- Mark H. Gonski, PE, Editor

The Committee also continues to support

- the ASCE/ACI sponsored Louisiana Civil Engineering Conference and Show
- MATHCOUNTS
- the concrete canoe and the steel bridge competitions of the local ASCE student chapters during the Deep South Conference and
- the regional Science Fairs.

The committee provides judges, monetary awards and donations to promote interest in the civil engineering profession. Committee member Norma Jean Mattei, PE, again organized ASCE involvement at the New Orleans Jazz and Heritage Festival held at the Fairgrounds. The Section named another Committee member, Subhash Kulkarni, PE, the 2003 Outstanding Civil Engineer. The committee is currently considering expanded involvement in Structural Engineering Institute and is looking into media methods to promote the civil engineering profession.

There are currently three seminars scheduled with tentative dates for the 2003-04 administrative year. They are

- *Sanitary Concrete Structure Design* by David Kittiridge on 12/3/03
- *Overview of the IBC and the 2004 New Orleans Building Code* by Subhash V. Kulkarni, PE on 1/29/04.
- *Finite Element Analysis and Modeling Recommendations* by Kenneth Will, in 3/04.
- *What's New in Wind Loading Codes (ASCE 7)* by Mark Levitan on 5/20/04.

All Structures Committee seminars are held at the University of New Orleans. Seminar subjects, dates scheduled and other pertinent information are published on the ASCE New Orleans Branch website at www.asceno.org as they become available. Announcements are also mailed 3 to 4 weeks in advance of a seminar. To add your name and address to the mailing list, please e-mail your request to Mark Gonski mark.h.gonski@mvn02.usace.army.mil. The committee is always interested in suggestions for new topics and speakers. Please feel free to forward your recommendations to Mark Gonski.

The Structures Committee sponsored 6 seminars during the 2002-2003 administrative year under the leadership of its Chair, Anthony F. Goodgoin, PE. The seminars are listed by title, presenter, date of presentation and Structures Committee member responsible for making the arrangements.

- *Light Cold-Formed Members in Structural Design*, by Melvin Loseke, PE, on 12/2/02 — Goodgoin.
- *World Trade Center Building Performance Study: Data Collection, Preliminary Observations, and Recommendations*, by Gene Corely, PE, on 2/6/03 — Dixit.
- *Essential Requirements for Reinforced Concrete Buildings & Analysis as a Tool to Describe Actual Behavior of Reinforced Concrete Structures* by Luis Garcia, PE, on 3/13/03 — Dixit.
- *Misuse of Computers by Structural Engineers — A Clear and Present Danger* (the 2003 David Hunter Lecture) by Leroy Emkin, PE, on 4/24/03 — Roussel.
- *Light Gauge Steel Framing and Connection Design*, by Michael Booth on 6/12/03 — Smith.
- *Vortex Induced Vibrations* (the 2003 Offshore Seminar); by Dale Ramsey, PE, and Bala Padmanabhan on 10/9/03 — Campo and Crutti.

Overviews of the first 4 seminars listed were previously published. The overviews for the remaining two seminars follow:

Light Gauge Steel Framing and Connection Design

The presentation was geared toward connection details and systems for light gauge steel framing (metal studs). The presenter, Michael Booth, is with The Steel Network (TSN) - an organization out of Raleigh, NC that works extensively in the development of connection systems for light gauge steel framing. The discussion addressed both load bearing and non-bearing systems. Complex issues such as load distribution, deflection, seismic requirements and shear resistive systems for structural rigidity were discussed. The seminar also provided solutions to industry questions regarding code requirements and construction methods.

Vortex Induced Vibrations

The seminar presented by Dale Ramsey, PE, and Bala Padmanabhan centered on the effects of vortex induced vibrations (VIV) on the mooring systems of floating structures in the Gulf of Mexico. The discussion addressed research and development required to isolate the problem and remedial repairs that have been made to counter VIV effects. Ramsey shared his experience in the research, development and installation of suppression devices on tension leg platforms. Padmanabhan discussed the design considerations for SPAR hull and mooring systems as needed to diminish VIV.

— Calendar of Events —

November 13-14, 2003	**ASCE Seminar on deep foundations in Houston, Texas.**
December 4-5, 2003	**ASCE Seminar* on stormwater utilities in New Orleans.**
December 18-19, 2003	**ASCE Seminar* on municipal stormwater management in Dallas, Texas.**
January 22-23, 2004	**ASCE Seminar* on wind loads for buildings and other structures in Dallas, Texas.**
January 23-25, 2004	**8th Annual Joint Engineering Conference in Baton Rouge hosted by the Louisiana Engineering Society.**
February 5-6, 2004	**ASCE Seminar* on stormwater utilities in Dallas, Texas.**
February 15-18, 2004	**Louisiana Transportation Engineering Conference in Baton Rouge sponsored by the Louisiana DOTD.**
February 26-27, 2004	**ASCE Seminar* on seismic design of highway bridges in Little Rock, Arkansas.**
March 18-19, 2004	**Section Annual Spring Meeting and Conference in Shreveport.**
September 9-10, 2004	**Louisiana Civil Engineering Conference and Show in Kenner**
September 10, 2004	**Section Annual Meeting in New Orleans.**

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

Highlights of the Section Annual Meeting

The Section Annual Meeting was held in New Orleans the evening of September 12, 2003 and hosted by the New Orleans Branch in the facilities of the Metairie Country Club. It is a Section membership meeting that has been traditionally held in conjunction with a banquet featuring the installation of the officers of the Section Board of Directors. This membership meeting marks the beginning of the new administrative year for the Section that follows after the conclusion of the installation of the elected Section officers. More recently the ceremonies were expanded to include the presentation of awards recognizing the professional achievements and contributions of outstanding Section members.

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

There were two special awards of appreciation presented for service to the Section. The first special award was to **Jerome M. Klier,** PE, in appreciation for his time and dedication during 4 years of continuous service as the Chair of the Section's Student Awards and Activities Committee. The second award was to **James C. Porter,** PE, in appreciation for his time and dedication during 9 years of continuous service as the editor of *The Louisiana Civil Engineer,* the Section's quarterly journal.

The members of the Section who have distinguished themselves through their outstanding accomplishments, and service to their profession and community were recognized during the Annual Meeting by the Section with awards for their endeavors and they were each presented commemorative plaques.

Outstanding Civil Engineer

Candidates are considered for this award annually. It is awarded 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 exemplary character. The award recipient must be a licensed engineer.

The recipient of the 2003 Outstanding Civil Engineer Award is **Subhash V. Kulkarni,** PE, from the New Orleans Branch. Kulkarni is the president of Kulkarni Consultants in New Orleans and he has been involved in the ASCE as the Chair of the Structures Committee. He also chaired the International Code Review Committee on behalf of the New Orleans Branch. He is a registered peer reviewer for the ASCE and has been actively involved in the ASCE for nearly thirty years. Kulkarni is also active in the Rotary, the Boy Scouts and many other cultural programs in his community. He has published numerous technical papers in national and international publications and he achieved national finalist status in the ASCE Engineering Excellence Award competition for his work on the Harrah's New Orleans Casino project.

Outstanding Young Civil Engineer

Candidates are considered for this award annually. It is awarded 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 exemplary character. The award recipient must be a licensed engineer or a certified engineer intern and be 35 years old or less at the time of the nomination.

The recipient of the 2003 Outstanding Young Civil Engineer Award is **Aurora N. Luscher,** EI, from the New Orleans Branch. At the time of her nomination for the award Luscher worked for Eustis Engineering Company as an assistant project engineer. She has since moved out of the Section. Luscher was extremely active in the ASCE Younger Member Committee programs and served as its chair in the New Orleans Branch. She was actively involved in the Tulane ASCE Student Chapter and volunteered her time to the Safety of Seniors Program sponsored by the Volunteers of America. Luscher served as a Big Sister with the Big Brothers/Big Sisters program of Southeast Louisiana.

Lifetime Achievement

Candidates are considered for this award annually. It is awarded to that Fellow Member or Life Member of the 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 exemplary character. The award recipient must be a licensed engineer and be 55 years old or older at the time of the nomination.

The recipient of the 2003 Lifetime Achievement Award is **Robert H. Boh,** PE, from the New Orleans Branch. Boh is the Chairman of Boh Brothers Construction in New Orleans. He is a Fellow Member and a Life Member of the ASCE. Boh has been active in the ASCE as well as other organizations. He is a life director of the Associated General Contractors of America and he is a past president of AGC of Louisiana and AGC of New Orleans. Boh has served on numerous boards in the New Orleans area including the Boy's Club of New Orleans and the United Way. He has been recognized with several awards some of which are the Volunteer Activist Award, Construction Industry Association Man of the Year and Junior Achievement Hall of Fame.

Outstanding Government Civil Engineer

Candidates are considered for this award annually. It is awarded to that Member, Fellow Member, or Life Member of the Section who has distinguished him/herself through service to —

(Continued on Page 14)

Section President Barbara E. Featherston, PE, presents an award of appreciation to Jerome M. Klier, PE, during the Section Annual Meeting.

President Featherston presents an award of appreciation to James C. Porter, PE, during the Section Annual Meeting.

President Featherston presents the Outstanding Government Civil Engineer award to G. Joseph Sullivan, PE during the Section Annual Meeting.

Three steps in planning your estate

By Blaise J. Ernst

Many people are working to accumulate assets with a goal of leaving a solid financial legacy to their heirs. However, building your estate is just one part of the equation. Planning its distribution, even if your estate is of moderate size, is just as important.

A carefully crafted estate plan ensures that your assets reach the people you choose, in the manner you choose. A well-prepared estate plan ensures that your property is distributed to your spouse, children and others as you would want. Equally important, such a plan may reduce or even eliminate estate taxes.

Three steps for developing an estate plan

The first step in the estate planning process is assessing the value of your estate. Current federal law allows you to leave an unlimited amount to your spouse free of federal estate tax. However, transfers to a non-spouse do not enjoy this tax-free transfer. If your estate is $1,000,000 or more and you were to die in 2002, federal estate taxes may reduce the value of your estate to non-spouse beneficiaries. Amounts transferring to non-spouse beneficiaries over $1,000,000 in 2002 are subject to federal estate taxes starting at 37% and rising as high as 50%, depending on the size of your estate. Recent tax law changes will impact federal estate taxes over the next several years, so it is a good idea to meet with your attorney or tax advisor as you plan your estate.

The second step is to review your family situation and objectives considering the following questions:

- Is your spouse a capable money manager or should funds be left in a trust?
- If funds are left in a trust, who should be the trustee?
- Where should property go after your spouse's death?
- Should all children be treated equally, or do any have special medical or educational needs?
- Should there be other beneficiaries - that is, a university or charity?
- If you own a business, do you have a "buy-sell" agreement to ease transfer of the company stock?
- If so, do you have sufficient cash to fund the agreement?

If you have a family, your primary concern is probably to ensure that your estate is passed on to your spouse and children in the amounts you intend. If you are not married, you may want to designate your beneficiaries and provide for the management of your financial affairs in the event you become disabled.

The third step is to consult your financial advisor and tax professional, as well as an attorney who can draft an appropriate will and trust agreements.

Wills and trusts can reduce your tax burden

Depending on the value of your estate, an appropriately drafted will can help reduce, defer or even eliminate estate tax on your property. For example, if you write a will that leaves all of your assets to your spouse, he or she will not have to pay any estate taxes because of the unlimited marital deduction. However, if your spouse does not remarry and he or she dies with a combined estate of more than $1,000,000, the heirs may face stiff estate taxes.

One way to lower your heirs' future tax bite is to set up a bypass trust. Trusts are legal devices that hold property for the benefit of named beneficiaries. Via a trust agreement that is established either outside or within your will, you name someone to manage assets placed in the trust and instruct how distributions are to be made. Trust fund assets can be placed in a variety of investments, including stocks, bonds, government securities, mutual funds and certificates of deposit. Since money in a bypass trust does not go directly to your spouse, it is not considered part of his or her estate, but he or she can benefit from having the income and a limited amount of principal from the trust. Your heirs

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(Continued from Page 13)

President Featherston presents the Outstanding Civil Engineer award to Subash V. Kulkarni, PE, during the Section Annual Meeting.

The officers for the 2003-2004 New Orleans Branch and LA Section are installed by ASCE President Thomas L. Jackson, PE during the Section Annual Meeting.

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 exemplary character. The award recipient must be a licensed engineer and be an employee of a federal, state or local government agency.

The recipient of the 2003 Outstanding Government Civil Engineer Award is **G. Joseph Sullivan,** PE, from the New Orleans Branch. Sullivan is the general superintendent for the Sewerage and Water Board of the City of New Orleans and a Life Member of the ASCE. He is a member of the Hydraulic Institute Pump Intake Design committee that in 1999 published the first hydraulic pump intake design standards. His work with the Sewerage and Water Board has been instrumental in keeping the City as flood-free as is possible. Sullivan has worked on numerous projects that have increased the efficiency of flood control operations. This included using small scale models of existing pump stations to correct their hydraulic problems, developing a screen cleaner for the intakes of the major pump stations to improve their operations and developing a simulated rainfall system to reduce the amount of flooding that has occurred in the City of New Orleans.

Highlights of the Louisiana Civil Engineering Conference and Show

By Deborah D. Keller, PE

Overview

The New Orleans Branch, in association with the Louisiana Chapter of the American Concrete Institute, hosted the 13th annual Louisiana Civil Engineering Conference and Show September 11th and 12th 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. Attendance was an all time high with nearly 600 registered participants. There were 24 sponsors whose participation subsidizes some of the cost of the Conference to reduce the cost of individual registration. There were also 34 exhibitors who also subsidize some of the cost of the Conference and provide the opportunities for conference participants to discover the materials, products, services and opportunities to better equip themselves to meet many of the challenges in their practices.

The two-day conference typically features a total of 34 technical sessions, with three concurrent tracks. The conference participants have the opportunity to ponder which of the 3 concurrent sessions to select to broaden their professional and technical horizons. Technical sessions in structural, geotechnical, environmental and transportation engineering, ethics, project management, and concrete design were available. Between the technical sessions, time was scheduled for participants to avail themselves of the opportunity to congregate in the exhibit hall to network and visit with the exhibitors and learn about the wide array of products and services represented. There was also ample opportunity for the Conference participants to network with fellow civil engineers from the region during the breakfasts, luncheons, coffee breaks, and the happy hour sponsored by the exhibitors.

Keynote address

The guest speaker for the ACI keynote luncheon on Friday was **Thomas L. Jackson,** PE, President of the ASCE, and a past president of Section. He shared his insight on the future of the civil engineering profession. Tom noted that the Conference was one of the largest Branch gatherings he has attended as President of the ASCE, which is indicative of the strength of the Branch's organization and its efforts to serve the civil engineering community.

Tom expressed concern about the tendency and interest of the specialty interests in the civil engineering profession to break the civil engineering discipline into several independent disciplines. He believes that this should not happen easily because of the closeness of the related technologies and that such a separation by specialty would have negative consequences on the effectiveness of the integrated services typically provided in engineered projects.

Tom acknowledged that an outcome of the educational experience in college for civil engineers, as for other graduates, is that they learn how to learn independently. A natural outgrowth of independent learning is the growth of specialized on-the-job training and knowledge acquired during an engineer's career. He expressed concern that specialty certification through licensing boards may destroy the civil engineering profession as we know it. He appreciates that specialty certification, and its authoritative acknowledgment, is an important characterization of the qualifications of civil engineers in the practice and the business of civil engineering. However, he believes that this certification should come from within organizations, such as the ASCE, rather than the licensing boards.

Tom discussed a recent movement in the National Council of Examiners for Engineering and Surveying (NCEES). NCEES is a national, nonprofit organization composed of the members of the engineering and surveying licensing boards of the United States and its territories. Most important was the news that the NCEES recently relented on a long-held notion that the principles and practice of engineering (PE) examination measured engineering and technical capabilities gained during the four years of practice as an engineer intern following passing the fundamentals of engineering (FE) examination. This notion led to state rules and regulations that forced certified engineer interns to wait four years to the end of their internship to take the PE examination that essentially consists of problems that recent engineering graduates are academically equipped to solve. Engineer interns ultimately will be able to sit for the PE examination immediately after they have passed the FE examination, recognizing that the important measure of passing the PE examination is *if* and not *when.*

Conclusion

The technical sessions and the ethics presentations of the Conference meet the Louisiana Professional Engineering and Land Surveying Board requirements for the professional development hours that must be accrued annually by its licensees to maintain their engineering licenses. Thanks to the support of the companies that purchase sponsorships, their employees who make presentations during the technical sessions, and that provide exhibits, the Conference has become recognized as an excellent and an affordable opportunity to acquire professional development hours in Louisiana. As one company official stated, "This conference is a real value for providing training to my civil engineers without the expense of out-of-state travel and hotels that drives up the cost of professional training."

ASCE President Thomas L. Jackson, PE and New Orleans Branch President Daniel L. Bolinger, PE look on as Section President-Elect Norma Jean Mattei, PE announces the winner of a door prize during the Conference luncheon.

Exhibitors showcase their services and products during the Conference. New Orleans Branch President-Elect Christopher G. Humphreys, PE and PSI's Terri Hoffman visit with another Conference participant.

Student chapter leaders recognized

The leadership of the ASCE student chapters in the Louisiana Section were well represented recently as the recipients of 4 of the 5 $1000 scholarships sponsored by the Southeastern Association of State Highway Transportation Officials. These scholarships were awarded to civil engineering students in Louisiana. They are **Seth Woods,** Treasurer of the McNeese State University Student Chapter, **Niayonda Picou** and **Shannon Chambers,** President and Vice President respectively of the Southern University Student Chapter, and **Robert Adam Davis,** the sophomore class representative for the University of Louisiana at Lafayette Student Chapter. **Muhammad Kokab,** a civil engineering student at LSU, also received a scholarship.

Kam K. Movassaghi, PE, Secretary of the Louisiana DOTD, made the presentations of the five $1,000 scholarships to the recipients during a ceremony held in the DOTD headquarters in Baton Rouge September 10, 2003. During the presentation Movassaghi stated, "We're optimistic that, in this small way, we may influence some of these young students to pursue a career in the transportation field and, in doing so, strongly consider the DOTD as a career choice." Movassaghi was instrumental in the decision by the SASHTO to allocate the scholarship funds to its 12 member states.

To qualify for a SASHTO scholarship, applicants are required to be either a junior or a senior with a declared major in civil engineering. They were then evaluated based on their academic success and their interest in pursuing careers in the transportation industry. The latter evaluation is based on a one-page composition relating the applicants' academic choices to their career goals in the transportation industry.

SU/LSU Joint Assistant Professor Khalid Alshibli, PE, believes that "Students achieve out of love for the civil engineering discipline... Students who are active in ASCE are usually the students who do well in their discipline." Five more scholarships will also be awarded for the Fall semester in 2004 and 2005.

ASCE Student Chapter leaders receive SASHTO scholarships from Kam K. Movassaghi, PE, Secretary of the Louisiana DOTD, during recent ceremony. Pictured from the left are Niayonda Picou, Shannon Chambers, Secretary Movassaghi, Robert Davis, Muhammad Kokab and Seth Woods.

McNeese State University

By Seth Woods

The Chapter opted to participate in the most recently concluded 2003 Deep South Conference of the ASCE student chapters in the region. The Chapter had not participated in the Conference in a few years making the experience essentially new one for the Chapter and funding our participation became an immediate issue. I have been involved in the McNeese ASCE chapter for 4 years. I was elected Treasurer of the Chapter last year and I am the active Treasurer for the 2003-2004 school year. As the Chapter Treasurer, I was placed in charge of the fund raising for the effort. One way we were able to raise funds was to organize and provide elevation surveying services. The chapter also solicited and received donations from the University and local businesses.

I was a member of the Chapter's concrete canoe team that was able to win second place in the concrete canoe competition that was one of the events during the Conference. The enthusiastic participation of the Chapter's members during the Conference assured a good experience for all of us and we received the bonus of winning the *School Spirit Award* for the Conference.

The Chapter has decided to participate in the next, 2004 Deep South Conference and it is in the process of raising funds again. To this end, we are organizing a golf tournament that will be scheduled for early spring. The Chapter is planning to expand its participation in the Conference activities by competing not only in the concrete canoe competition, but in the surveying and concrete bowling ball competitions for which more involvement of chapter members is required and being sought.

The Chapter is actively scheduling and conducting regular membership meetings and it is currently involved in building a float for the McNeese homecoming parade. Thank you for allowing me to briefly share with you our Chapter's recent activities.

Editor's Note:

The Deep South Conference of ASCE student chapters in this region includes all of the student chapters in the Louisiana Section and others in the Arkansas and Mississippi Sections. The 2004 meeting of the Conference will be hosted by the University of Mississippi ASCE Student Chapter in Oxford, Mississippi. The ASCE student chapter members of the Deep South Conference are from the following schools:

- Arkansas State University
- University of Louisiana at Lafayette
- Louisiana State University
- Louisiana Tech University
- McNeese State University
- University of Mississippi
- Mississippi State University
- University of New Orleans
- Southern University and
- Tulane University.

I am sure that all Section members and particularly the alumni of the particular student chapters will join me in wishing the Conference host and all of the participating student chapters well.

This issue of the journal and particularly this Student Chapter News feature welcomes the volunteer services of Southern University Associate Professor Yvette P. Weatherton, PE, in developing and maintaining close contact with the leadership of our student chapters so that the news they have is shared in this regular feature.

Southern University

On October 4, 2003, Chapter members and faculty volunteered to restore the old Howard Brothers building on Airline Highway in Baton Rouge, and the future location of a *Habitat ReStore*, part of the Habitat for Humanity effort. The Habitat ReStore will sell new and used construction materials to the public at discounted prices. However, before the ReStore can open, the property has to be restored, and this is the focus of the Chapter and faculty team effort.

The student chapter devotes its time and energy to projects like this for a variety of reasons. According to Chapter and team member Eddie Watkins, a junior in civil engineering, the primary motivation he senses is the desire to give back to the community. Most of the team members were hoping for an opportunity to refurbish a home for an elderly person or to assist with the construction of a new home for a family rather than to refurbish a commercial property. However, once involved, they realized the importance of such a project on a variety of levels. The Habitat ReStore will directly benefit lower income families in the community on a continuing basis by making more affordable, discounted building materials available to them.

A secondary benefit of the Habitat ReStore is to give an old building a new life and purpose and possibly reverse the fortunes of a declining commercial area. Unoccupied and dilapidated properties "...contribute to drug activity and other crimes in the community. If buildings cannot be refurbished, they should be torn down." remarked Chapter Treasurer Nicole Harris. The ongoing operation of the Habitat ReStore will also help the environment by reclaiming and making use of building materials that would normally be disposed of in landfills.

In volunteering for projects with Habitat for Humanity, the prospects are excellent that Chapter members will have the opportunity to gain first-hand practical construction experience. The ribbon-cutting ceremony for the Habitat ReStore is scheduled for November 15. For additional information on Habitat for Humanity, visit www.habitat.org.

Southern Chapter members Leron Corley and Andrea Payton paint the storage shelves in the Habitat ReStore facility.

The Tulane Chapter's team entry "Roman CAN-genuity" in the CAN-struction event sponsored by Second Harvester Food Bank.

Tulane University

The Chapter started the year in a *CAN-tastic* manner. We helped collect 62,000 pounds of food for the Second Harvester's Food Bank as part of this year's *CAN-struction* event. CAN-struction is a national competition bringing together architecture and engineering teams to create sculptures from canned and dry food products in their containers. The food used in the competition is then donated to Second Harvester's Food Bank. The New Orleans area food drive raises the second largest amount of food in the country — second only to New York City. This was the second year that the Chapter participated in the event.

Our Chapter's team was led by the energetic and enterprising Adam Ridge in collecting and using over 1000 cans of assorted food and over 500 bags of beans to construct a replica of a Roman aqueduct. The 6-person team completed the construction in less than 12 hours. The Chapter's double-arched pork-and-bean can structure that was dubbed *Roman CANgenuity* was awarded the first place trophy for structural ingenuity.

The contest was enjoyable, challenging and life-giving in the good that we can do for the New Orleans community. We are already considering ideas for next year's competition entry.

Section membership

Near the close of the 2002-2003 administrative year there were approximately 1810 ASCE members who resided in the Louisiana Section. Of these approximately 270 (or 15 percent) were Life Members who are exempt from paying dues. There were approximately 930 ASCE members resident in the Section that paid their voluntary Section Dues to be fully enfranchised members of the Section. Excluding the approximately 270 dues-exempt Life Members, 60 percent of the ASCE members resident in the Section paid their volunteer Section dues. Excluding the Life Members, there were approximately 610 ASCE members resident in the Section that opted not to pay their Section dues for the 2002-2003 administrative year.

If you are among the 610 ASCE members that opted not to pay Section dues, please give your section some added consideration. Attend some of your branch membership meetings and broaden your local acquaintances in the profession and catch up on the current issues in the profession. Attend a statewide Section membership meeting and technical conference and broaden your regional acquaintances in the profession and at the same time collect a few professional development units that are required to maintain your engineering license in Louisiana. Find out about a few of the good reasons why 930 of your fellow ASCE members who reside in the Section choose to be among its enfranchised members.

Section News and Information

Highlights of the August Board of Directors meeting

The division of responsibilities between the Section leadership in maintaining the current entries on the website were discussed at length to the extent that the responsibility should be placed directly in the most appropriate hands. It was noted that with the exception of photographs, pdf files and some other special formats that require html programming capability, it was relatively easy to enter simple text by copying and pasting MS Word files. The issue was committed to be studied in depth and reported back to the Board with recommendations for its consideration during its next regular meeting.

The placement on the Section website of the names of — and internet links to — the sponsors of the section journal, *The Louisiana Civil Engineer*, was discussed relative to how it should be implemented and particularly how the cost should be defrayed. It was a general consensus that the cost should be defrayed through the one billing of the sponsorship of the Section journal. At this time, the website and the journal for this purpose may be considered together the seamless mass communication function of the Section.

The summary of the monthly audits from January 2003 through July 2003 of the staff usage by the Section at the Louisiana Engineering Center was reviewed by the Board. It was noted that the Section funds 16 hours a month for the "LES/CEC/ASCE Secretary." The subject monthly audits indicates that the actual usage by the Section was approximately 11 to 12 hours per month. The actual hours are divided between the LES/CEC/ASCE Secretary, Victoria Guitreau, who processes minutes of Board meetings and maintains the current roster of Section members, and the LES bookkeeper, Cathy Guidry, who maintains the addresses list of the advertisers in the Section journal and processes the routine billing statements.

In response to a recent request to place an advertisement for civil engineering jobs available, the dormant *Employment* area of the Section website was opened to discussion. There were several conclusions drawn:

- There will be no direct charge for listing employment opportunities.
- Listings will be for a maximum of 30 days
- Listings may be extended 30 days at any time by the advertiser.
- Only advertisers in the journal will be eligible to list employment opportunities.
- Only civil engineering or closely related professional employment opportunities will be listed.

Since the website has not yet been formatted and set up to edit its Employment area, the Section is not prepared to act on the current request. However, the webmaster will be requested to make the necessary setup on the website to accommodate future requests.

The branches were encouraged to nominate their members for the ASCE *Award for Service to People.* These should be the members of a branch that are — or have been — actively and consistently involved in developing and/or providing public service activities. This is not a competitive award limited to a precious few but a form of general recognition of the significant public service provided on the local level.

The Louisiana Engineering Society will host the 8th Annual Joint Engineering Conference in Baton Rouge, January 23-25, 2004. The Conference will be housed in the Sheraton Downtown. Engineering societies or their chapters in Louisiana are invited to participate in this mutually sponsored event by providing sessions/speakers and exhibitors. Participating engineering societies will share with the LES any profits made from the Conference according to a formula measuring their degree of participation. The Section has regularly participated in this conference in the past.

A brief discussion about the plans of the civil engineering community through several local organizations in Baton Rouge to support a move to have a proposition placed on a referendum ballot to codify it into the City-Parish Plan of Government. The proposition is the East Baton Rouge City-Parish government ordinance governing its qualifications based selection process for engineering services. This would remove the City-Parish QBS process from the vicissitudes of politics that result from the ease to change ordinances by a simple majority vote of the City-Parish Council.

The Section Annual Spring Meeting and Conference has been scheduled for March 18-19, 2004. It will be hosted by the Shreveport Branch in Shreveport and it is planned to be housed in the Sheraton-Shreveport.

Other announcements and discussions:

- The District 14 Council Meeting is scheduled for October 20, 2003 in New Orleans.
- Concern was expressed that the procedures in the ASCE Constitutional have been possibly violated in the attempt to revise the form of governance for the national ASCE organization by reducing the intended time span for effective responses to the proposition
- Concern was expressed that there are no requirements for the Deputy Secretary position being advertised for by the Louisiana Professional Engineers and Land Surveyors (LAPELS) Board and it does not require an engineering license.
- Concerns were expressed about the vague — often only informally verbalized — rules of the LAPELS concerning electronic seals and signatures, their inconsistency with the law and the liability of professional engineers to being prosecuted by the Board for related violations.
- Participation in the annual awards program of the Section by the branches was discussed including concerns about the current practice and recommended changes in the timing for the awards to facilitate participation
- Concern was expressed that the national Section Public Affairs Grant (SPAG) program has all but disappeared in terms of funding and/or availability to the sections.

Highlights of the October Board of Directors meeting

The discussions about some form of partnership with Red Vector — an online continuing education provider — have come to some understanding. The Section definitely will not provide its membership address list and there appear to be no other proposed cooperative endeavors that can be shared between the Section and Red Vector. Red Vector was advised that it would be welcome to advertise its services in the Section journal and on the Section website.

The State Public Affairs Grants program has been discontinued. The Merit Grant program that represented 40 percent of the grant funds distributed by the national ASCE to the sections and is awarded on a competitive basis will be continued. The Section has submitted requests for Merit Grants in the past without success or acknowledgment. The Section will apply again for a Merit Grant considering the unknown prospects of being successful, the probably small or smaller amount of funds available, an unknown selection method, the unknown values used to judge applications, and no previous audits of the process made available.

The Section Operations Handbook published on the Section website and developed to its current state by Pamela G. Miller, PE, will be reviewed for its consistency with Section policies and procedures and its completeness by President Featherston. This will be done in conjunction with her review of the Section's Constitution and Bylaws for their consistency with current Section operations and any desired changes in them.

The effectiveness and staffing of the Section's delegation to the District 14 Council was discussed at length. The Council typically meets twice a year and the most important function for the Section's 3 voting members is to show up for — and participate in — these meetings. To assure that the Section's delegation includes a member that is aware of the current issues and sensibilities among the Section lead-

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Board of Directors Installed

The elected officers and directors who serve on the Section Board of Directors were installed by ASCE President Thomas L. Jackson, PE, September 12, 2003. The installation ceremony was held during the Section Annual Meeting housed in the Metairie Country Club and hosted by the New Orleans Branch. The officers and directors of the New Orleans Branch were simultaneously installed with the Section's officers and directors. The members of the Board of Directors for the 2003-2004 administrative year are:

Officers:

- Barbara E. Featherston, PE, President
- Norma Jean Mattei, PE, President-Elect
- Kim E. Martindale, PE, Vice President

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Barbara E. Featherston

Norma Jean Mattei

Kim E. Martindale

Timothy M. Ruppert

Charles L. Eustis

Joe E. "Butch" Ford

J. Keith Shackelford

Gustave S. "Gus" Cantrell

Patrick J. Landry

Reda Bakeer

Roy A. Waggenspack

Failure is always an option

By Henry Petroski

Scientists seek to understand what is, the aerospace pioneer Theodore von Kármán is supposed to have said, while engineers seek to create what never was. The space shuttle was designed, at least in part, to broaden our knowledge of the universe. To scientists the vehicle was a tool; to engineers it was their creation.

With the release of the report of the Columbia Accident Investigation Board, there is a new focus on the culture of NASA. Engineers have played a prominent but not a controlling role in that culture, both in the design of the shuttle and in the planning of its missions. When the report speaks of NASA's "broken safety culture," the particular failure it cites is "a consistent lack of concern" that Columbia may have been damaged by debris at takeoff. But perhaps NASA can be better understood by examining the culture that arises from the inevitable — and healthy — tension among scientists, managers and engineers.

A common misconception about how things such as space shuttles come to be is that engineers apply the theories and equations of science. But this cannot be done until the new thing-to-be is conceived in the engineer's mind's eye. Rather than following from science, engineered things lead it. The steam engine was developed before thermodynamics, and flying machines before aerodynamics. The sciences were invented to explain the accomplishments — and to analyze their shortcomings.

The design of any device, machine or system is fraught with failure. Indeed, the way engineers achieve success in their designs is by imagining how they might fail. If gases escaping from a booster rocket can lower efficiency or cause damage, then O-ring seals are added. If the friction of reentry can melt a spacecraft, then a heat shield is devised.

Much of design is thus defensive engineering: containing, shielding, and fending off anticipated problems on the drawing board and computer screen so that they cannot bring down the design when it flies. Obviously, total success can only come if every possible mode of failure is identified and defended against.

Engineering is also very much about numbers. O-rings must be sized; the thickness of the heat shields specified: the weight of the insulation calculated. Often, the numbers work at cross purposes, as when increasing shield material decreases available payload. Engineering design is ultimately the art of compromise.

What results from the design process is a thing that has unique characteristics. It can withstand the conditions for which it was designed as long as it maintains its integrity. There is usually some leeway allowed, for engineers know that operating conditions cannot be predicted with absolute certainty. Until it fails, how far beyond design conditions a system can be pushed is never fully known.

But engineers do know that nothing is perfect, including themselves. As careful and extensive as their calculations might be, engineers know that they can err — and that things can behave differently out of the laboratory. On the space shuttles, O-rings got scorched, heat tiles fell off, foam insulation broke free. To engineers, these unexpected events were incontrovertible evidence that they did not fully understand the machine.

Engineers do not feel comfortable with things they do not understand. It is at this point that they begin to act more like scientists. In the case of the scorched O-rings, the engineers studied burn patterns. They looked for a correlation between the damage and temperature, and they warned about launching when the temperature was outside the bounds of their experience and scientific study.

If engineers are pessimists, managers are optimists about technology. Successful, albeit flawed missions indicated to them not a weak but a robust machine. When engineers and managers clashed over the 1986 Challenger launch, the managers pulled rank. In the case of Columbia, engineers who worried about damage that the spacecraft may have suffered during launch were ineffective in getting it properly inspected before reentry.

No one knows a machine or its failure modes as well as the engineers that created it, and even they know it only as well as it reveals itself to them. Because they are so humbled by their creations, engineers are naturally conservative in their expectations of technology. They know that the perfect system is the stuff of science fiction, not of engineering fact, and so everything must be treated with respect.

The Columbia Accident Investigation Board has recommended that NASA establish an Independent Technical Engineering Authority. This would put the responsibility for technical matters where it rightly belongs — with the engineers who, because they know how the space shuttle was designed, also know best how it can fail. Without that knowledge, another fatal accident is inevitable.

Editor's Note: This article by Henry Petroski, a professor of civil engineering at Duke University, was transcribed from the OP-ED page of the New York Times *8/29/03. It is a general policy not to use articles in this journal outside of those written by — and of interest to — civil engineers in Louisiana. However, this article is poignant to our times, of compelling interest to civil engineers and an excellent example of Petroski's lucid style of writing about engineering. If you are not familiar with Petroski's works, his publications are listed on his home page http://www.mindspring.com/~petroski/. There are several books he has written about engineering for a general audience. Much like this article demonstrates, they are informative, and enjoyed by engineers and laypersons alike because they provide a certain clarity about engineering and engineers. Petroski's latest book Small Things Considered: Why There Is No Perfect Design has been released recently.*

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ership, the Section President will serve as an a nonvoting ex-officio delegate to the Council. Miles B. Bingham, PE, and Timothy M. Ruppert, PE, have agreed to continue to serve as delegates to the Council. Kim E. Martindale, PE, and Norma Jean Mattei, PE, have agreed to serve as alternates to the Council. This leaves the need to seek the commitment and to appoint one additional delegate and one additional alternate to the Council.

A tentative budget for the 2003-2004 administrative year was developed in detail by the Board as a committee of the whole and it was adopted. The tentative budget is based on a review of the current trends in income and expenses and estimating the expected income and expenses of the year. It will be compiled in detail prior to the next Board meeting at which time it is anticipated that it will be reviewed and finalized for consideration to be adopted.

Other items of discussion and business were

- The Section Annual Spring Meeting and Conference will be hosted by the Shreveport Branch in Shreveport. It is scheduled for March 18-19, 2004.
- The ASCE Branch and Section Workshop is scheduled to be held in New Orleans January 23-25, 2004. Norma Jean Mattei, PE, will be the Section's delegate to the Workshop.

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- Timothy M. Ruppert, PE, Secretary-Treasurer
- Charles L. Eustis, PE, Past President

Directors-at-Large:

- Joe E. (Butch) Ford, PE (2 years)
- J. Keith Shackelford, PE (2 years)
- Gus S. Cantrell, PE (1 year)
- Patrick J. Landry, PE (1 year)

Also serving on the Section Board of Directors are two assigned directors who at this time are appointed by the New Orleans and Baton Rouge Branches and they serve staggered 2-year terms. In addition, there are directors from each of the 4 branches who also serve as the current president of their respective branches.

Assigned Branch Directors:

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

Branch Directors:

- John E. Bosch, Jr., PE (Acadiana)
- David M. Burkholder, PE (Baton Rouge)
- Christopher G. Humphreys, PE (New Orleans)
- C. Eric Hudson, PE (Shreveport)

Letter to the Editor

This letter to the editor expresses the views of the national ASCE organization and objects to some of the views expressed in the Section journal. It was written by Patrick J. Natale, PE, Executive Director of the ASCE, for Thomas L. Jackson, PE, President of the ASCE, who concurs entirely with the national views expressed.

To the Editor -

...The May Board Highlights section of the August 2003 issue contained a number of inaccurate statements, misinformation and what appeared to be personal opinions rather than facts regarding several key ASCE initiatives. Recognizing the significant efforts of numerous volunteers working on these important activities in an effort to enhance the Society and the profession, I believe it is important to correct the record and publish accurate information.

The proposed new governance structure for ASCE has involved a significant amount of volunteer effort and communication. Contrary to the published statement that there has been a "lack of timeliness and forthrightness in providing information about the development and ongoing deliberations concerning the governance proposal," a team of volunteers and staff staff have [sic] worked diligently over the past year to develop and communicate a governance structure that will enable ASCE to operate effectively and efficiently. Details of this new proposal are contained on the Society's website at www.asce.org/governance/ and have been discussed at each of the zone leadership conferences and many district council meetings over the last year. My column in the upcoming issue of ASCE News addresses the new governance proposal, as did my column in the December 2002 issue. The topic has been discussed by ASCE's Board of Direction for several years, and reviewing and potentially revising ASCE's governance has been addressed in ASCE's last three strategic plans.

Although the ASCE Board will not consider the second constitutional reading for the proposed restructuring until November, and a membership constitutional vote on this issue remains nearly a year away, ASCE will continue to communicate details of the proposal and to seek input from our members over the next year. ASCE is a membership organization and is only able to function and thrive with member input and communication, and the Society's leadership is committed to continue its efforts in that regard.

While we welcome and solicit member input and opinions on the new proposal, it must be based on accurate information. The newsletter stated that "the zone vice presidents and district directors were opposed to the proposed change in governance." This statement is again incorrect. More than two-thirds of the officers and directors comprising the Board voted in May and again in July to receive the associated constitutional amendment on first reading. With reference to the statement that "there is also strong objection to non-ASCE members having a vote on the national Board of Direction," I should also clarify that the current proposal requires that all members of the Board would be members in good standing of the Society. Additional detail on the proposal, including director qualifications, is located on the ASCE website.

Following the above-referenced inaccuracies, the newsletter goes on to state that the proposal to revise the academic prerequisites for licensure and professional practice under Policy 465 "essentially died in its most recent incarnation" and is "being reworked in committee." Again, this statement is incorrect. Policy 465 on Academic Prerequisites for Licensure and Professional Practice is alive and well and has remained unchanged from the policy approved by the ASCE Board of Direction in October 2001. A copy of the policy remains available to the public on the ASCE website (see www.asce.org/pressroom/news/policy.cfm) as does a host of related information, including a draft report of a task committee charged with implementing Policy 465 and formulating the practice-oriented body of knowledge necessary to enter into the civil engineering practice at a professional level (see www.asce.org/professional/educ/). In fact, the Society's commitment to this important policy is demonstrated by its recent initiative to create a standing board committee on Academic Prerequisites for Professional Practice (see www.asce.org/inside/bylaws.cfm).

I would also question the basis of a number of statements, including that of the Outstanding Projects and Leaders Program is of "dubious origin." Recognizing the significant efforts of our members and staff to advance the science of the profession of engineering for the enhancement of ASCE, the profession, and humanity, I hope you will correct these inaccuracies and verify such information in the future so we can ensure the accurate exchange of information and ideas, with a resulting maximization of our services, operations and value to members and the public...

Thomas L. Jackson, PE
President, ASCE.

- Career Benchmarks -

Section members **Michael L. Bachand, Jr.,** PE, **George A. Brashear,** PE, **Brian J. Buchert,** PE, **Randall J. Carroll,** PE, **Wesley D. Jacobs, Sr.,** PE, **Tonja L. Koob,** PE, **Jesse T. Thompson,** PE, **Michael T. Troxclair,** PE, and **Chester G. Wilmot,** 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 **Tanya Ann Bankston,** PE, **Keely Crowder,** PE, **Brent L. Downs,** PE, **Thomas M. Gattle, III,** PE, **Scott M. Gros,** PE, **Jason B. Harris,** PE, **Suki Y. Hay,** PE, **Robert L. Heath, Jr.,** PE, **Kelly M. Kemp,** PE, **Mariano D. Mata,** PE, **Dalton L. McCaffrey, II,** PE, **Roland D. McClure,** PE, **Floyd E. Milford, III,** PE, **William J. Moran, II,** PE, **Michael G. Ng,** PE, **Julie L. Oliphant,** PE, **Gregory A. Pagani, Sr.,** PE, **Peggy Jo B. Paine,** PE, **Dale O. Parsons, II,** PE, **Donald S. Phillips,** PE, **Jerry M. Pitts,** PE, **Emmanuel D. Plakotos,** PE, **Jaret M. Treas,** PE, and **Michael D. Vosburg,** 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.

— 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.net

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.com

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

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

Editor's journal

By James C. Porter, PE

Bureaucrat: The cussword

It was reported that President Bush attempted to discredit a scientific report about global warming issued by his executive branch that supported conclusions that did not agree with his political agenda. His tactic was to denigrate its authors by referring to them as *bureaucrats* as if to infer incompetence that would discredit the report and its source. Being a career employee in the executive branch of state government, I am familiar with displeasure in my agency being expressed — both internally and externally — by referring to it or its employees as a bureaucracy or bureaucrats. Governor Foster expanded his repertoire by expressing his contempt for the DOTD employees in his executive branch by referring to us as *gnomes.* I guess this is to distinguish us from his perceived stature of those — including himself — in the more enlightened business community.

Bureau was once commonly defined as nothing more than a "*business* establishment" or an "administrative unit" within. Now it is more commonly defined as a *government* department. By extension, the definition of bureaucrat, once defined as a member of a bureau, is more focused and derogatory — "...a *government* official who follows a narrow, rigid formal routine... who is established with great authority..." The definition of bureaucracy and bureaucrat has evolved toward inferring an ineffective government agency or a government official conferred with too much authority — carefully avoiding reference to the elected variety or the business bureaucracy.

I suspect that the evolution of the word "bureau" and its derivatives to a pejorative term for ineffective government was natural. It was once generally used in the title of government agencies such as the Bureau of Public Roads, the Bureau of Indian Affairs, and the Federal Bureau of Investigation. This, coupled with the public's animosity, poor perceptions and failed expectations precipitated in part by the difference in culture-based values and behavior between those in government and private employment, may have driven the evolution.

Because of the nature of the statutes and ordinances enacted by elected representatives and the subsequent enabling rules written by government officials, the organization, administration and the employees that carry them out must follow the typical, narrowly controlled processes so established. This produces order but it often produces the stultifying rigidity that causes anguish.

Given the narrowness of rule-based administration and employment, those who are attracted to — and/or flourish in — this environment often have a temperament for it that is not helpful. Ineffective rule-based administration can cause anguish for those seeking and needing vital government services, and the dehumanizing rule-based employment can also cause anguish for government employees attempting to provide services. A most obvious and serious example today is the *adult* public school teacher.

Typically well endowed with intelligence and competence for the job, teachers are treated by a cadre of supervisors — or an administration — as if they are incompetent, untrustworthy, and less mature and less educated than those they teach. Administrative positions are often filled by ex-teachers who are incompetent or who simply loathe the work in the classroom. In this way public education systems seem to nullify their largest single, effective resource — the classroom teachers who collectively know more about education in the classroom than the disrespectful administrators who attempt to control its every detail with ineffectual accountabilities. In their attempt to control, I believe that the administrators waste valuable resources, and kill the very spirit and flexibility needed in the classroom for effective education.

I maintain that this destructive behavior is predicated on a *successful* career path to administration established by the low expectation of *failure* in vital entry-level, professional work. Further, this behavior occurs naturally in organizations with rule-based operations and where the creativity and energy necessary to be successful in entry-level professional work is not required in the narrow confines of administration. This seems to breed a natural animosity for — and distrust of — competent, entry-level, professional employees by administrators who either can-

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Lawyer and accountant engineers

The tirade goes like this: *The lawyers, accountants and personnel (aka human resources) types have taken over the engineering organization. We engineers used to decide what and when engineering was going to be done. The attorneys, accountants, etc. were there to support our decisions and activities. Now, attorneys guide, if not direct, engineering activities around what they perceive as mine fields of legal problems. Accountants and personnel types dictate convoluted rules for engineers to follow that suffice for the support work they once provided. However, these rules often obstruct engineering work and judgment rather than support it.*

This was a recurrent and resounding theme among some of the more outspoken engineers that were in the higher administrative positions some years back. Many of them were absolutely livid about the perceived shift in power in the *engineering* organization from its engineers to what was once considered a support staff of lawyers, accountants, etc.

Many of these engineers have since retired from service and the tirades have become less frequent and more muted until they have all but disappeared. Either the problem — if it ever was one — disappeared or the new generation of engineers affected by this perceived shift in power just accepts the situation probably because they had no choice and no point of reference or particular expectations coming into their jobs.

Is the engineering *team* now led by attorneys and engineering judgment and the work processes controlled to some extent by accountants and personnel types? Are the engineers now merely servants of the engineering team to function at the whim of others? Does the engineering team now consist of *peer* members including engineers, attorneys, accountants and personnel types in a power-sharing role that was just initially perceived as power-grabbing? Are engineers having to engineer according to the dictates of attorneys, to conform to accounting and personnel rules and regulations and to provide all of the initiative to do the engineering within their imposed constraints? Are engineers accommodating the requirements of an *extraneous* staff that used to be a *support* staff? *Is the tail wagging the dog?* Whatever the reality is, the new generation of engineers appears to be okay with it? What about you?

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then receive the balance of the principal upon your spouse's death.

It is never too early to consult your financial advisor, attorney and tax professional and to begin preparing for the future. Steps taken today may help ensure that your heirs will receive as much of your assets as possible free of tax and in the manner and amounts you would wish. If you would like to learn more, please feel free to contact the author.

Blaise J. Ernst, Associate Vice President, is a financial advisor and retirement planning specialist with Morgan Stanley in Covington, Louisiana. He may be contacted by e-mail at blaise.ernst@morganstanley.com or (985)893-7772 or (888)893-2743. *This article does not constitute tax or legal advice. Consult your tax or legal advisers before making any tax- or law-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.*

Uncertain triumvirate

The elegant, two-dimensional relationship between the customer and the provider is the classic and most easily understood in the roles of defining and satisfying contractual needs. The incentives and methods to seek and provide satisfaction through contractual obligation are driven by market incentives and regulated by law. Government regulation outside of contract law is a strong, mature and yet still rapidly emerging third party in this relationship in civil engineering work. Though essentially passive in nature, there appears to be no end to the growth or the rate of growth of government regulation and its influence. Therefore, seeking effective contract services demands a clear, mutual understanding of the forces and motives that drive each of the 3 stakeholders in this uncertain triumvirate. A better understanding of the spirit and intent of the rules, duties and actions of each party should ease what appears to be uncertain and sometimes resentful, if not angry and ineffective, relationships given some of the war stories.

A close relationship between the customer and the provider via a unique contractual obligation for services and/or products establishes the essential relationship and incentives through a meeting of the minds. There is a body of law governing the particulars of the contractual relationship but this is not of concern here. The alphabet soup of federal and state agencies such as the EPA (Environmental Protection Agency), the Louisiana DEQ (Department if Environmental Quality) and the OSHA (Occupational Safety and Health Administration) that regulate engineering activities via the law and the promulgating regulations are of concern here. The laws and regulations administered by these agencies are intended to represent the public's interest as a third party to the customer/provider contractual relationship. The responsibility for meeting these government regulations is often accepted as a contractual obligation by the provider of the engineering services.

Having spent the bulk of my career in highway engineering, I recently gained a different perspective of the government's regulatory interests and motives concerning emerging drinking water standards. It was thrown in my face like ice water. Now that it has recently become feasible to continuously monitor trace compounds considered contaminants in drinking water to one part per trillion (10^{-12}), regulations are being rapidly justified and developed to use this technology.

These regulations will raise the health standards for potable water while increasing its cost by as much as 100 times the current costs. Recognizing that only about one percent of the potable water supply now provided is ingested by humans, a strategy of other than treating 100 percent of the water supplied to meet these costly, emerging health standards for potable water would appear reasonable if not the only feasible solution.

One strategy considered feasible is to treat the water at the source to the safety standards for water possibly 10 years ago before it is conveyed through the water distribution system to the points of consumption where the water is treated to meet the emerging health standards. The interesting dynamic here is that the regulators and the socially conscious stakeholders appear to be in a quandary about how to passively impose on the consumer the use of potable water meeting the emerging health standards. They fear some consumers will opt to drink the *untreated* water conveyed to the point of consumption and intended to be used to bathe, wash cars and dishes, water gardens, etc. though it is *safe* to ingest.

The justification for the emerging potable water standards appears to be concerned with removing or neutralizing contaminants related to long-term *health* concerns as opposed to those dealing with immediate health concerns or *safety*, heretofore the primary measure of potable water. This causes me to wonder about the position of the consumer who understands the nominal long-term health benefits of potable water treated to the emerging standards yet would consciously choose not to pay 100 times more for the benefit. This form of water treatment as visualized is not a *passive* measure such as the water treated before distribution or the highway bridge already built that affects the safety of every one of its millions of users. It is an *active*, personal water treatment device activated by the consumer to bring safe water to the higher, long-term health standard at the point of consumption. It serves one or a very few users who thereby are given a personal choice to use it and who are typically capable of making an informed decision.

Laws for the mandatory use of personal safety devices such as motorcycle helmets and seatbelts appear to be clearly justified public interest issues based on economics alone. Individuals may consciously understand and accept the risk but they do not fully accept the responsibility of the consequences of an accident while not using the protection of such safety devices. When they suffer resulting permanent disabilities that occur at a much higher frequency without the mandated protection, a resulting high public and social cost is incurred often for their long-term care and/or and life-long support. Similar arguments may be advanced for the consequences of accidents resulting from the acts of driving while intoxicated, speeding or reckless operation of a vehicle. The costs of these acts are compounded by the consequences shared by innocent victims.

Potable water health standards may delay —

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not do the entry-level work or simply loathe it, and are consequently put in charge. This behavior exists in government and to a lesser extent but nonetheless it exists in private industry.

The larger and more mature the organization the more likely a significant bureaucracy exists to transact its routine business. The effects of the rigid nature of an overstaffed business bureaucracy in the United States is considered a chief contributor to Japan's easy penetration into its market. To compete successfully, they needed flexibility to respond to market conditions. Without competition, productivity in government tends to be measured more by conformance to — and effective pursuit of — established rules rather than by productivity in generating profit.

I have two significant personal experiences with what I believe were a result of administration distrust and/or incompetence. The structural assessment of *complex* bridges that had already been accomplished in-house was contracted out to be done again because the administration either didn't like the results or didn't trust the ability of its engineering staff.

How could they trust? I suspect that there was no effort made by the administration to understand the bridge rating process and therefore it was an unknown. In any event, after the inexperienced engineers selected to do the work sought and received sufficient direction in bridge rating methods and the technology of the complex bridges from the in-house staff, it was verified — if not independently — that the work had been done correctly. Still, I don't think this experience particularly improved the administration's confidence in its engineering staff.

The Red River Bridge in Alexandria at Murray Street circa 1902 was operated over a decade in unknown if not unsound structural condition. It had been field inspected and evaluated independently by in-house engineers over this time. Their consistent recommendation to close and replace the bridge was ignored. However, recommendations to correct the evident defects and to legally limit the weight of vehicles were followed. The high risk of undetected defects from the limited field inspections, the low load capacity, the heavy rush hour traffic and the lack of effective vehicle weight enforcement makes it no small miracle that the bridge did not collapse while in service.

Eventually, a consultant was hired and given ample resources to perform comprehensive inspection and testing of the bridge. The testing precipitated its partial failure. It was reasoned that without rehabilitation, the bridge would probably collapse if an attempt was made to open it for marine traffic. The obvious conclusion had not changed. The bridge was and had been operating too near collapse for at least 10 of its 75 years in service. Its continued use for the 10 years was not feasible and could not be justified by structural assessment. What a huge risk to public safety and for so long before the administration obtained a structural assessment it would trust and accept.

From my limited experience and observations, I would conclude that the impact of an administration — bureaucracy in the true cuss-word sense — can be very negative in government service. A sad paradox is that often some of the most coveted experienced teachers and engineers in the private sector are those taking an early retirement from a career in government service. After all, they are competent, used to being abused and will work cheaply.

Truth

Truth! Now that is a loaded word that would seem to fit nicely in a discussion of *ethics.* My experience suggests that truth can be easily sullied depending on the measuring stick and more of interest here depending on whose truth it is... Though this statement seems a bit *Clintonesque* by construction, it is not intended to be evasive.

The truth can be affected by the standard used to measure it because it depends on the appropriateness of the standard used. It also depends on the motives and the integrity of the one selecting and applying the standard. It has recently been demonstrated that a CFO can cook the books using standard accounting practices to fabricate nonexistent corporate profits to deceive investors. It has been alleged that Sir Isaac Newton presented experimental data that is too good to be true. It may have been used to deceive the scientific community of his time into supporting what became the body of science known as Newtonian physics. Though the principles of Newtonian physics are no less valid, they are just not as good as some of Newton's originally published experimental data would suggest.

What is the point? The truth is derived from interpreting *evidence* that is by nature a fuzzy process based on the standard of measurement and influenced the motives and integrity of the observer who interprets the evidence and gives it meaning. *Truth* is received by an audience and accepted or rejected as its truth based on its trust in the source. *Trust* is founded on perceived honesty — the key measure of trustworthiness.

I believe that the breadth and depth of one's sense *honesty* can be explained more easily by its rarer complement — overt and covert dishonesty. Of no particular interest here is overt dishonesty — that which is known and intentional. The covert dishonest pursuit of an agenda in a state of denial is of interest. Denial allows the pursuer to maintain an unswerving — if not a false yet unknown — sense of moral certitude even if this covert dishonesty is exposed. Simply stated, I believe that denial is a powerful force fed by self-serving motives and the particular need to believe that one is right and on the moral high ground. Further, that denial allows the truth to be concealed as much if not more from the prevaricator than the audience.

A good example of covert dishonesty practiced in the ASCE is its Code of Ethics prior to the early 1970s. When I first read it, I immediately perceived it to be a callous if not effective effort supporting the special interests of those who probably wrote it — the principals in the consulting business. Its clear intent to me was to keep their employees from starting competing engineering businesses in their market. To nullify this code, it took the successful legal action of the U.S. Department of Justice alleging a federal antitrust violation. It was contested to the Supreme Court at great expense. By consent decree, the ASCE and the other engineering societies with similar codes were forced to dispose of the offending elements. I believe that the denial enabling their covert dishonesty will allow those responsible for these defunct codes of ethics to go to their graves in righteous indignation.

The power of someone else's truth over us as the 1970s ASCE Code of Ethics clearly demonstrates a valid reason for a grave concern we should all share. Those in positions of political influence through elected or appointed office may lack the humility to understand that their truth may only be the truth as they want to see it and not as it is. I believe that this group hubris is prevalent and exacts adverse consequences on those of us under its influence. It appears to be driven by the same sociological principle that the courage of the mob is greater than that of its individuals. I believe that our government with its checks and balances is intended to curb this excess and I think we witness in the news almost daily the process if not its fallout. This poignant yet wise and humorous admonition to the individual in the mob was once offered by Mark Twain: *Whenever you find yourself on the side of the majority, it is time to reform — or pause and reflect.*

From personal experience, honesty will out in me only when I can push myself past my own sense of self-righteousness and the blinding anger inspired by my powerful need to be right when *my* truth is questioned. When I can do this, I am sometimes lucky enough to glimpse the truth more as it is and not as I so desperately want it to be. Similarly, I believe that the individual's preconceived biases that can cloud the truth are inspired by the ubiquitous but unique values, attitude, perception, motivation and habit, though they are not inherently evil. They are the basic part of an acquired and discriminating human nature. How willing and able I am to fathom my own motives, I believe is a measure of how honest I can be first with myself and then with others.

As an example, I have never read a published news account of which I had prior and intimate knowledge that I didn't think that the reporter must have been on Mars when he covered the story. This probably says a lot about my strong biases and how I may fail to deal effectively with them. Possibly, the reporters may be less biased and/or more dispassionate than I am.

Because it is my desire to search for and to know the truth and I suspect that we may have a mutual interest, I felt impelled to discuss truth and more particularly the integrity — or the lack thereof — of *my* truth as I perceive it. I was inspired to do this by an interesting standard for measuring truth that was claimed by a respected member of our engineering community. He intimated that what is written — published — was important prima facie evidence of the truth and as important to him as what he could independently discern for himself. If you subscribe to this or a similar arbitrary standard, I hope that I have inspired you to seek your own truth or at least given you good reason to leave everything you read under my byline out of it. The larger message is that great care should be exercised in giving the mob or anyone power over you or your perception of the truth.

As a final note, I believe that life's experiences tend to humble me as I grow resulting in new depths of understanding but only if I am willing to seek them. For this reason, I believe that a certain humility and the courage to share it at this stage in my life's journey is gained through hard-won knowledge, experience and confidence. I believe that it makes me more tolerant — if not more respectful — of the *truths* of others I do not share at this time.

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not eliminate — terminal illness and death by *natural* causes. Mandatory use of potable water to the emerging health standards do not appear to share the same public interest issues of personal safety devices or the economic justification for their mandatory use. The consequences of the failure to use potable water treated to the health standards would appear to be closer to the informed decision to smoke cigarettes without the addiction issue.

The cost of an individual's terminal illness occurs in any event whether related to smoking or not. Ostensively, it can be argued on this basis that the consequences are mostly if not entirely limited to the individual and do not extend to the public notwithstanding that the U.S. justice system has rewarded ill smokers, and the families and care-givers of deceased smokers given the smokers' informed decision to smoke knowing the risks. This results in what may be considered an inappropriate reward mollifying the natural consequences of smoking — an earlier rather than later terminal illness. This activist ethic and precedent of punishing cigarette producers by rewarding smokers for consciously cutting their lives short using a legal drug gives a hint that it may be leading to a similar but reversed and possibly more pernicious injustice — criminalization for failure to use an in-the-home activated drinking water treatment process?... Time will tell.

It appears to me that the regulation of engineering activities should be more stringent and urgent for *safety* issues as compared to those related to *health*, but government regulation appears to be proceeding toward the same emphasis for both safety and health standards giving them equal standing. This would appear to be an extension of the trend in medicine to aggressively and actively maintain wellness — as in *health maintenance organization* — rather than just passively treat illnesses as they occur. Its original quality of life incentive was to reduce the frequency of illness. Its economic incentive was to reduce the frequency of illness to the extent that the overall cost of maintaining wellness and treating illness together would be less than passively treating illness only. While surely the altruistic intentions are good, one must ultimately ask questions such as, are the results effective or is it worth the increased cost? The answers may telegraph a consensus shift to some different ethical plane to which I may not be sensitive.

Engineering on the cheap

I believe that an important part of the answer to high quality engineering is experience judiciously applied across the process. Civil engineering is a field where it is clearly understood among its practitioners that its practice is both *science* and *art.* However, it would appear that the part experience plays in effectively applying the science and more particularly the art is misunderstood by clients, management and sometimes practitioners alike.

There are not enough contact hours in instruction in the minimum acceptable civil engineering curricula to effectively cover the *science* and software of the practice across the full spectrum of the civil engineering technologies. While there are reasonable and feasible proposals to extend the current civil engineering curricula a year to get better coverage, covering the art across the full spectrum of civil engineering technologies that is clearly connected to experience is not and cannot be practically taught in the curricula. However, I believe that this does not make the art — gained through experience — any less important in the practice engineering.

Because both experienced and inexperienced engineers practicing side-by-side appear to be doing the same work, it is often difficult for the non-engineer to appreciate the value of the higher compensated, experienced engineer. For this reason, experienced engineers are often the first to go in staff reductions.

The engineering services that suffer from inadequate resources are prevalent and encouraged by cutthroat competition inspired by clients trying to get the engineering done on the cheap and engineers who are willing to accommodate them. When clients and employers are not willing to pay for the appropriate and necessary engineering services particularly those provided by experienced engineers, and the influence and value they bring to the engineering work, it would seem appropriate to ask what are the consequences for their absence if any and where do they go when dismissed? The answer to both questions appears to be part of a cause and effect story.

What are the consequences? They are numerous as I would interpret them. Tons of superfluous steel and other valuable structural materials are buried in "engineered" facilities. This is inappropriate and inefficient. In the other extreme, facilities can be rendered inadequate or unsafe. There are "engineered" facilities that are a struggle to keep operational because of poorly conceived details, material choices and components. There are "engineered" facilities in varying degrees of premature operational failure requiring costly, unanticipated and avoidable maintenance and/or replacement. There are construction contracts for "engineered" facilities that run substantially over budget because of unanticipated constructability problems. Need I go on? Each example is usually a very expensive price for the absence of engineering experience.

Where do they go? The discarded, experienced engineers often provide engineering services referred to as *value engineering* and *re-engineering.* The service is actually remedial engineering — performing the engineering that was not done in the first place. If it had been, there could be no significant value or viability in these services. Another engineering service provided by these experienced engineers is maintenance planning. This may be remedial engineering to correct premature problems caused by poorly conceived details, material use and components that find their way into a facility. These are high quality engineering services to correct problems caused when high quality engineering services are not provided in the first place.

Sir Isaac Newton acknowledged the influence and value the experience of others had on his work with the poignant statement: "If I have seen further than others, it was because I was standing on the shoulders of giants." I believe that this is an axiomatic truth in the career and practice of every scientist and engineer. Clients need to understand that elegant engineering solutions are not often found without the benefit of applying experience, and in engineering experience is gained only in the execution of the work that is largely trial-and-error. There are two important reasons why I believe experienced engineers are truly worth more than inexperienced engineers:

- They are better able to know and detect errors in the review, usually limiting them to paper and not incorporating them into "engineered" facilities.
- Their leadership influences the direction and the quality of the trials in the trial-and-error process that usually leads more directly to more elegant solutions.

Though I have a severe problem with the indiscriminate application of the qualification-based selection method for retaining engineering services as the only ethical method, I fully support an often-stated motive of its advocates — Place the needed engineering resources ahead of the cost. To retain the needed engineering resources, it is important to identify and fund them and not to preempt them with inadequate funding in the front end of the project. Otherwise, it is inherently ineffective to apply the needed engineering resources — high quality engineering services — at the back end through remedial engineering services to correct the deficiencies caused by inadequate, low-quality engineering resources. Experience demonstrates that the quality and cost of the engineering resources *needed* for a project can vary profoundly from one provider to another. The qualification-based selection method, in my opinion, inherently presumes the opposite, and it limits a client's ability to discern value in competitive services. For this reason, I believe that client sophistication is more important to the effective selection of high quality engineering services than the method of selection.

Did you know . . .

...that rules published by the Federal Communications Commission prohibit the use of powerful ground-penetrating radar systems over concerns that they may interfere with vital government communication networks? State transportation agencies — excluding the Louisiana DOTD — had approximately 1,000 radar systems in service to scan and locate voids and weaknesses in the supporting base materials beneath pavements. The rules took effect July 15, 2002 when state transportation agencies discontinued using this relatively new, expensive (in initial cost), nondestructive technology. It provided for relatively rapid inexpensive operation and reliable detection. They are now forced to revert to using less effective methods available to detect such problems that require substantially more resources. This means not detecting some problems in a timely manner resulting in higher repair costs. It is estimated that the use of the next best available technologies alone can increase the detection costs in some instances by as much as $50,000 per lane per mile.

- Dallas Morning News

...that accident data recorders are being installed by the major automobile manufacturers in their new automobiles. It is the result of research sponsored by the National Highway Safety Administration using technology that is equivalent to the flight data recorder, or black box. The recorder is designed to store the accident data beginning 5 seconds in advance of the incident. With the introduction of global positioning systems and other sensor technologies it is anticipated that it will have positive effects on driving habits, automobile safety, accident investigations, and insurance rates. It should substantially improve accident reconstruction technologies and it has already detected early release problems with air bags that led to a manufacturer's recall. Detractors are concerned about the potential for fraud and privacy issues.

- San Francisco Chronicle 09/02/02.

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Movement

The lift-slide drawbridge is a movable bridge invention that when it is supporting roadway traffic is a two-span continuous structure. When roadway traffic is not present and it is being operated (retracted), it is an equal-arm, cantilever beam structure. Operationally, it is initially lifted (translated) vertically to an elevation that will clear it over the adjacent approach spans, then it is retracted from the navigation channel by sliding (translating) it horizontally back over the adjacent approach span. As a design alternate and by the means of rollers attached to the underside of the retractable span, the deck of adjacent approach span may be used to partially support the retractable span as it moves horizontally back over the adjacent approach span.

The three operating positions of the bridge follow in more detail:

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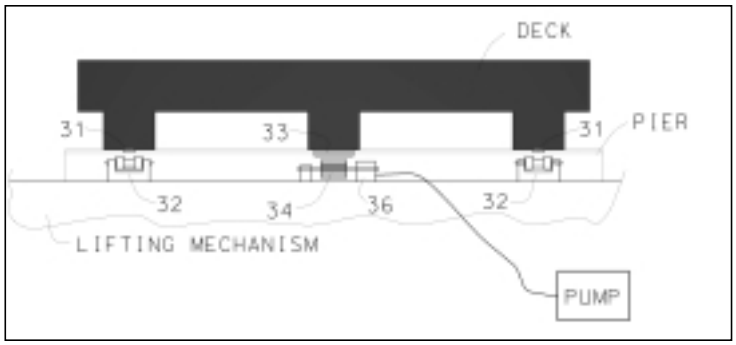

Figure 3. Schematic cross section of the lift-slide span in the down-closed position showing the sliding apparatus disengaged.

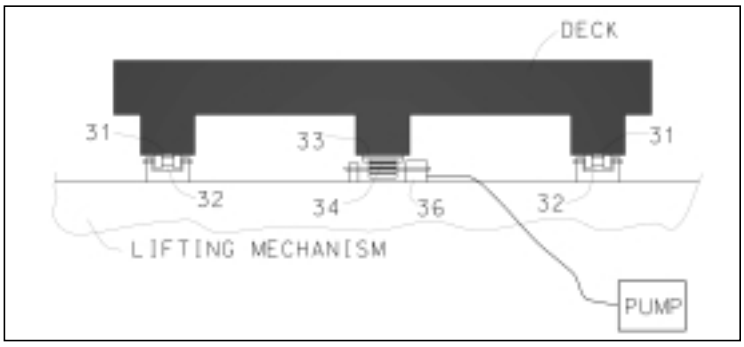

Figure 4. Schematic cross section of the lift-slide span in the up-closed or -open position showing the sliding apparatus engaged.

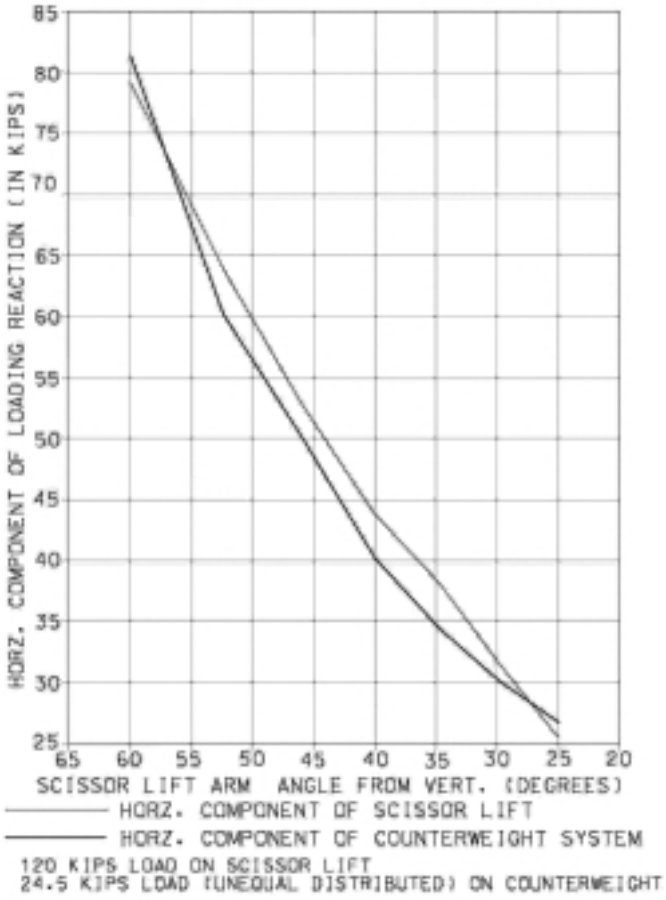

Figure 7. (Right) Forces produced by variable load counterweight system in the lift-slide mechanism and the corresponding horizontal component of the force in the scissors lift apparatus.

- In the *down-closed position* as shown in Figure 1(a) with roadway traffic present, the bridge is a two-span continuous beam structure supported directly by the piers with one span over the navigation channel.
- In the *up-closed position* as shown in Figure 1(b) with roadway traffic not present, the bridge is an equal-arm cantilever beam structure supported on the lift-slide mechanism with one cantilever span over the navigation channel and lifted vertically by the lift-slide mechanism high enough to clear the adjacent spans on the bridge approach and any other obstacles when the span is retracted horizontally from the navigation channel.
- In the *up-open position* as shown in Figure 1(c) with roadway traffic not present, the bridge is an equal-arm cantilever beam structure supported on the lift-slide mechanism and retracted horizontally from the navigation channel with one cantilever span over the adjacent spans on the bridge approach.

Operation

When in the down-closed position, the retractable span is supported directly by the piers and functions as a two-span continuous beam fixed span for live loads. To operate the span, roadway traffic service is ceased and the vertical lift apparatus of the lift-slide mechanism is activated. It is a hydraulically driven scissors lift apparatus used in conjunction with the variable load counterweight system to provide an effective means to lift the retractable span typically 2.5' to 5.0' to clear adjacent approach spans as shown in Figures 2(a) and 2(b).

In the down-closed position, the retractable span is supported directly on the piers and the sliding apparatus is disengaged as shown in Figure 3. Once in the up-closed position, the equal-arm cantilever beam structure is supported by the slide-lift mechanism and the sliding apparatus is engaged as shown in Figure 4. The sliding apparatus driver is then activated to retract the cantilevered span translating it horizontally to the up-open position thus opening the navigation channel to marine traffic. The sliding apparatus is secured atop the lift-slide mechanism and coupled to the bottom of the retractable span. It allows the retractable span to slide or translate horizontally over the adjacent approach spans and the navigation channel while in the up position.

Following the item numbers shown in Figures 3 and 4 and in braces in this text, the sliding apparatus driver consists of a span rack [33] attached to the underside of the retractable span. It is engaged by a span pinion [34] coupled to a span drive motor [36] that are both attached to the lift-slide mechanism. The retractable span is guided by span guides [31] that are attached to the underside of the retractable span seated in flanged wheel trucks [32] that are attached to the lift-slide mechanism.

Variable load counterweight

Movable bridges having a vertical lift motion require a counterbalance to effectively and safely handle the heavy load of the movable span. The only practical counterbalance design for the large vertical movements of a vertical lift drawbridge is counterweights suspended by cables passing over sheaves supported at the top of lift towers. Since the lift-slide drawbridge only requires the lifting of its retractable span a few feet, the traditional counterweight design, if feasible, would appear to be prohibitively expensive and complex; so a simple, innovative counterweight system was invented.

The variable load counterweight system is shown in Figures 2(a) and 2(b) and schematically demonstrated in Figure 5. It is designed to counter the characteristic forces inherent in operating the scissors lift apparatus proposed to lift the span. This is done by coupling to the movement of the scissors lift apparatus with the counterweight suspension via the lifting arm. The counterweight is mounted on — and cantilevered from — a hinged support point and it is suspended by the lifting arm roller.

The raising or lowering of the scissors lift apparatus moves the lifting arm roller support point on the counterweight arm simultaneously rotating the cantilevered counterweight about its support. This varies the length of the moment arm and the magnitude and the direction of the

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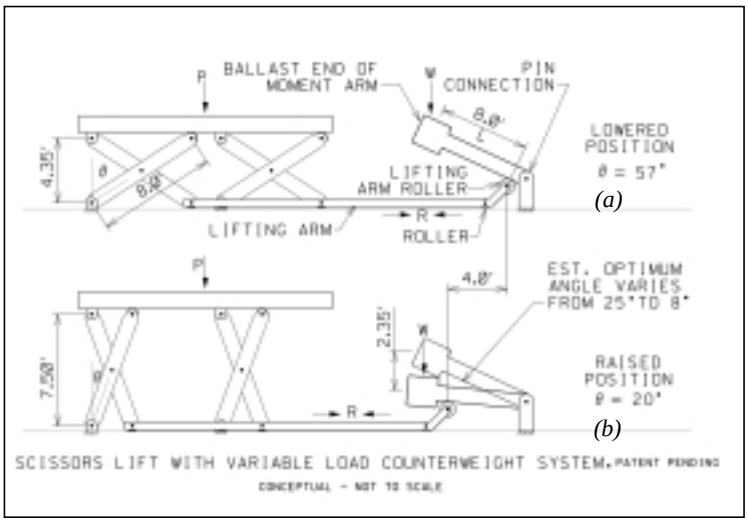

Figure 5. Schematic diagram showing the slide-lift mechanism with the scissors lift apparatus connected to the variable load counterweight system through the lifting arm and lifting arm roller. (a) Slide-lift mechanism shown in the lowered position. (b) Slide-lift mechanism shown in the raised position.

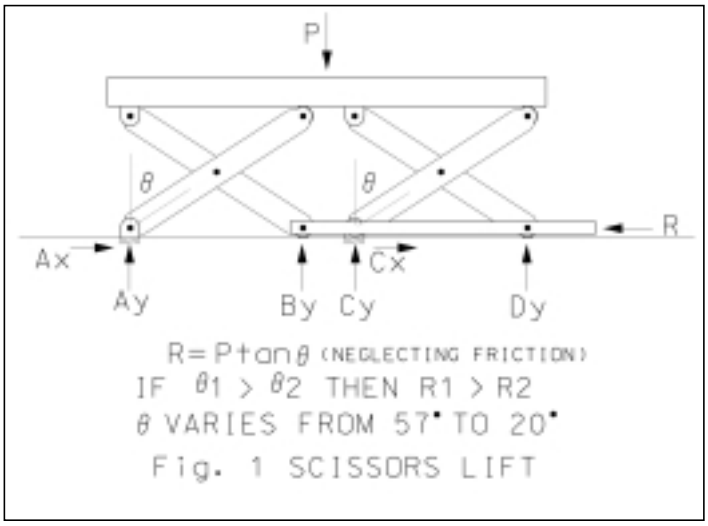

Figure 6. Schematic diagram of the scissors lift apparatus showing the relationship between the weight of the span (P) and the horizontal force (R) in the lifting arm.

force that suspends the counterweight. The variation in the magnitude and the direction of the force on the lifting arm roller suspending counterweight is designed to produce a horizontal component of the force applied to the lifting arm that corresponds closely with the variation in the horizontal component of force required to raise and lower the scissors lift apparatus as shown in Figure 6. In this way, the variable load counterweight system is designed to effectively counterbalance the forces in the system throughout the full range of movement as shown in Figure 7.

The application of a variable load counterweight system, coupled with a scissors lift apparatus, provides a very simple means to counterbalance the large variable forces encountered in operating the scissors lift apparatus used to lift the heavy retractable span. The design of the variable load counterweight system requires that the counterweight weigh 25 to 30 percent of the weight of the retractable span to be lifted. This compares to the weight of the counterweights for a vertical lift drawbridge — 100 percent of the weight of the span — suspended by cables over sheaves. This is a substantial material cost savings when considering that a typical span may weigh 250 to 1000 tons or more.

The advantages of a properly configured variable load counterweight system coupled to the scissors lift apparatus are

- *less dead weight* – In a variable load counterweight configuration, a moment arm is formed between the counterweight ballast and the lifting arm creating a mechanical advantage that magnifies the ballast load on the said lifting arm roller allowing for less ballast than would otherwise be required to counterbalance the forces in the system.
- *simplicity* – The design is very simple with few parts making it easy to fabricate, install and maintain.
- *reduced cost* – The overall cost of design, fabrication, materials and installation is a fraction of that of the other methods considered.
- *reduced installation time* – The time required to install the variable load counterweight system is also expected to be a fraction of the time required for conventional systems.
- *flexibility* – The variable load counterweight system can be configured in a multitude of ways to effectively meet the counterbalance needs of a specific project.
- *efficiency* – The variable load counterweight system makes practical the employment of a scissors lift (or similar) apparatus for the lifting of very heavy loads.

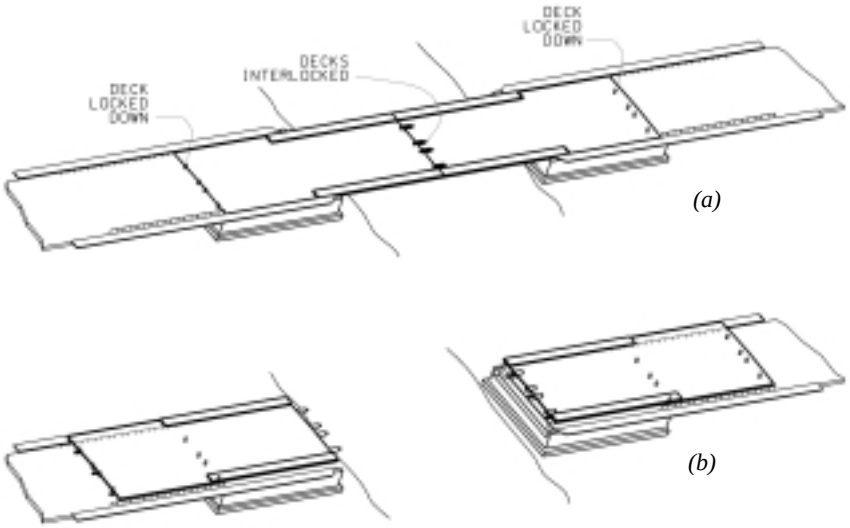

Figure 8. Two operating positions for a double leaf lift-slide drawbridge: (a) down-closed and (b) up-open.

Configurations

It is foreseen that there will be two configurations of the lift-slide drawbridge — the single leaf configuration and the double leaf configuration. To cross the larger navigation channels, twin opposing lift-slide drawbridges are positioned opposite each other and the extended leaves of the cantilevered spans are connected by a shear lock and then lowered simultaneously onto their piers creating a double leaf lift-slide drawbridge as shown in Figures 8(a) and 8(b). In the down-closed position, the double leaf configuration will be a three-span continuous beam with a hinge at the midpoint of the center span and provisions for live load uplift on the end supports.

It is anticipated that the single leaf lift-slide drawbridge will be practical for navigation channels up to 75' fender-to-fender clear width. The double leaf lift-slide drawbridge will be practical for navigation channels from approximately 150' and greater fender-to-fender clear width.

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Conclusions

The lift-slide drawbridge is expected to require less technical effort to design than the conventional movable bridge types and its fabrication is expected to require only the standard tools and processes in a well equipped machine and fabrication shop. It is a low-tech solution with expected construction, operation and maintenance costs to be equal to or lower than the conventional movable bridge types while using conventional components and materials. The construction and operations requirements for a lift-slide drawbridge should be greatly reduced compared with those of the conventional movable bridge types. Perhaps more importantly, the construction time is estimated to be approximately one year, cutting the construction time by at least half that of the conventional movable bridge types. The process for bidding and letting a project for a lift-slide drawbridge is expected to be similar to that for any bridge construction project.

With the prospective advantages of the lift-slide drawbridge, preliminary estimates indicate the construction cost will be approximately 50 to 70 percent that of a conventional vertical lift drawbridge. Consider for example the $6 million Daigleville Bridge in Houma — the aforementioned drawbridge now under construction. According to preliminary cost estimates, the cost to construct a lift-slide drawbridge at that site would be approximately $3.5 million — or a 40 percent savings.

The aforementioned $44 million Second Avenue drawbridge in Miami, Florida — a bascule bridge — was constructed with 2,300 tons of structural steel and 2,400 tons of counterweight ballast steel. A lift-slide drawbridge design constructed at the site could reduce the structural steel by 15% and the counterweight ballast by 70% for a total estimated reduction in steel of 2,025 tons. Assuming steel costs an average of $4,000 per ton, this structure would cost $8 million — or 18 percent — less to construct.

The cost saving in fabrication methods associated with the lift-slide drawbridge was not considered in these estimates. A more refined cost analysis comparison obtained from a complete preliminary design of a comparable lift-slide drawbridge design and a conventional movable bridge type at the same site will better reveal the particular cost savings.

With continued development, there is reasonable confidence that the lift-slide drawbridge will become a new cost effective, functional and versatile movable bridge type added to the mix of the conventional movable bridge types. It is expected to compete well and it may become the first choice among alternatives for most movable bridge projects.

Supplement: Variable load counterweight system

To simplify the lifting components and minimize the cost and effort required to lift the movable span of the lift-slide drawbridge, the *variable load counterweight system* (VLCS) was conceived in conjunction with the *scissors lift apparatus* (SLA) and it is in the early stages of development. The mechanics of the VLCS are based on a relatively simple mechanical lever principle. The findings presented are preliminary and based on computer analysis and 1/6 scale model testing. The VLCS will provide:

- neutral stability counterweight function for the SLA for the full range of its movement
- minimum power requirements as a result of the counterweight function and
- level power requirements throughout the operating cycle.

To design an adequate counterweight system for the SLA, three issues need to be resolved.

- The counterweight and SLA force to lift the span are in neutral equilibrium over the full range of the SLA movement.
- The amount of power required and its associated cost to lift the span in approximately 30 seconds is minimized.
- The cost and time to construct the counterweight system is equal to or less than that provided with the conventional movable bridges; and its ongoing maintainability must be equal to or better than that provided with the conventional movable bridges.

To explain the mechanics behind the *coupled scissors lift apparatus and variable load counterweight system* (SLA/VLCS) it must be envisioned how the SLA is actuated. The horizontal and vertical force components of the reaction from the weight of the span through the SLA are shown in Figure 6. Following the schematic diagram shown in Figure 6, the equilibrium of the SLA will be maintained for its full range of movement by opposing R; the total horizontal component of the reactions resisting P, the weight of the span and the SLA.

The total horizontal component of the reaction R, is a function of the angle of the scissors lift arm from the vertical θ, where $R = P \tan \theta$. Given the full range of the SLA is $20^o \leq \theta \leq 57^o$ then for all values of $\theta_1 > \theta_2$ the corresponding values of $R_1 > R_2$ consistently throughout the defined full range of the SLA movement. A mechanism is needed that will continuously apply a horizontal force -R to oppose the horizontal component of the reaction R over the full range of horizontal movement of the SLA. This would place the system in continuous neutral equilibrium over the full range of the SLA movement.

The VLCS/SLA as shown in Figure 5 was specifically designed to produce continuous neutral equilibrium over the full range of the SLA movement. When the SLA is in the down position as shown in Figure 5(a), the lifting arm roller is forced toward the counterweight pin connection in continuous contact with the counterweight arm resulting in a large force directed approximately 25º from vertical producing a horizontal component to oppose the total horizontal component of the reaction R in the SLA resisting the weight P of the span and the SLA. When the SLA is in the up position as shown in Figure 5(b), the lifting arm roller is drawn away from the counterweight pin connection while in continuous contact with the counterweight arm resulting in a much smaller force directed approximately 8º from vertical producing a horizontal component to oppose the much smaller horizontal component R of the reaction in the SLA resisting the weight P of the span and the SLA.

It can be appreciated that the opposing horizontal force produced by the VLCS will vary continuously between the lowered and raised position of the SLA. By design this will produce a continuously varying horizontal force that approximates the continuously varying horizontal forces produced by the horizontal component of the reaction R in the SLA throughout its full range of movement as is the case and shown in Figure 7. This results in the approximate neutral equilibrium throughout the full range of movement of the SLA.

The SLA/VLCS is a system of connected rigid bodies with one degree of freedom. To exchange potential energy between the VLCS and the SLA, there must be vertical movement of the counterweight. This vertical movement is enabled by the hinge support of the cantilevered

Neutral Equilibrium Test Data from an Approximately 1/6 Scale Model of the Coupled Scissors Lift Apparatus and Variable Load Counterweight System (Patent Pending)
Angle of the scissors lift apparatus varies from 54° to 25° from vertical.
Angle of cantilever counterweight arm varies from 16.7° to 8.4° from horizontal.

Load on SLA (1)	Load on CWA (2)	Max. force req'd. to lift SLA (3)	Max. force req'd. to lower SLA (4)	Dist. from pin to CWA center of mass (5)	Dist. from pin to CWA roller (6)	(2)/(1) (7)	(3)/(1) (8)
lbs.	lbs.	lbs.	lbs.	feet	feet	ratio	ratio
100	50	20	15	5.0	0.52	0.5	0.2
100	70	20	15	4.0	0.52	0.7	0.2
100	100	20	15	2.5	0.52	1.0	0.2
150	75	30	20	5.8	0.52	0.5	0.2

SLA - Scissors lift apparatus CWA - Counterweight Arm
(3) Note: For all test sets, the system is in neutral equilibrium.
(7) Note: As the distance from the pin to the CWA center of mass increases, the ratio of the load on the CWA to the load on the SLA weight increases.
Note: On a working system the load on CWA will likely be 25 to 33 percent of the load on SLA.

Table 1

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(Continued from Page 28)

counterweight of the VLCS. To assure the potential energy is exchanged between the SLA and the VLCS through the lifting arm, the lifting arm roller support relies on the SLA for stability. The potential energy is exchanged between the VLCS and the SLA through the horizontal force and associated movement in the lifting arm that couples the two.

An approximately 1/6 scale model of the SLA/VLCS was built and initial tests using it are consistent with the previous explanation of the mechanics. The scale model was constructed with a 38 lb. counterweight physically cantilevered 7.66 feet with a center of mass including the arm located 4.00 feet from its pin connection. A series of tests were conducted with approximately 150 lbs. simulating the weight of the span and the SLA.

In the first test, the VLCS was uncoupled from the SLA and the horizontal reaction R required to lift the span and the SLA over the full range of movement of the SLA ($25^o \leq \theta \leq 54^o$) was observed. The maximum horizontal reaction R required to lift the span and the SLA over its full range of movement was greater than 150 lbs.

In the second test, VLCS was coupled to the SLA suspending the 38 lb. cantilevered counterweight on the lifting arm roller. With no additional weight added to the cantilevered counterweight, the maximum additional horizontal force required to lift the SLA over its full range of movement was reduced to 140 lbs.

In the third test an additional 37 lbs. weight was placed on the cantilevered counterweight arm at a position 7.66 feet from its pin connection resulting in a center of mass located approximately 5.8 feet from the counterweight pin connection. The maximum additional horizontal force required to lift the SLA over its full range of movement was 30 lbs. and the SLA/VLCS was operating in neutral equilibrium. A summary of additional test results is provided in Table 1.

At neutral equilibrium achieved in the third test, the SLA/VLCS model provided an 80% reduction in energy requirement compared with the SLA uncoupled from the VLCS. If similar results are obtained on a full scale, movable bridge with a span and SLA structure weighting 300 tons the power required to lift the deck 3.5 feet in 30 seconds would be approximately 29 horsepower delivered with four 6" diameter hydraulic rams at 1200 psi.

In another series of tests, it was observed that the force required to lift the SLA dropped in proportion to the weight added to the cantilevered counterweight. Weight was incrementally added to the counterweight until the SLA/VLCS began operating in neutral equilibrium. The maximum force required to lift the SLA was approximately 1.5 of the calculated frictional forces in the system. More weight was incrementally added to the counterweight and the SLA/VLCS continued to operate in neutral equilibrium until the force to lift the SLA was reduced to zero and the SLA tended to lift on its own. These observations demonstrate that the SLA/VLCS operates in neutral equilibrium over a large variation in the weight of the cantilevered counterweight.

In conclusion, the VLCS appears to favorably resolve the 3 previously stated issues. It balances the forces to lift the span and the SLA is in neutral equilibrium over the full range of movement of the SLA. It provides an energy-efficient mechanism that can readily lift a bridge span and SLA 3 to 5 feet in 30 seconds. The hope of minimum cost and time to construct and good maintainability of the SLA/VLCS would appear to be in the evident simplicity demonstrated in the details provided.

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