THE LOUISIANA CIVIL ENGINEER

ACADIANA BRANCH • BATON ROUGE BRANCH
NEW ORLEANS BRANCH • SHREVEPORT BRANCH

Journal of The Louisiana Section
On line at http://www.lasce.org

Volume 16 • Number 4 August 2008

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Implementation of LRFD driven pile design

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Louisiana Civil Engineering Conference
September 24-25, 2008

Section Annual Meeting in Shreveport
September 19, 2008

THE LOUISIANA CIVIL ENGINEER

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PUBLISHER:
Baton Rouge Printing, Inc., Port Allen, LA

The Louisiana Civil Engineer quarterly journal is an official publication of the Louisiana Section of the American Society of Civil Engineers with an average circulation of approximately 1800. The Section neither guarantees the accuracy of the information provided nor necessarily concurs with opinions expressed. It does not claim the copyrights for the contents in this publication. Please submit letters and articles for consideration to be published by email to jimporter@dotd.la.gov, facsimile to (225) 379-1797 or mail to the Publications Committee c/o James C. Porter, PE • 2608 Terrace Avenue • Baton Rouge, LA 70806-6868.

LOUISIANA SECTION • AMERICAN SOCIETY OF CIVIL ENGINEERS

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The Louisiana Section is located in ASCE Region 5 that consists of the Louisiana, Mississippi, Alabama, Georgia and Florida Sections.

President's Message

By E. R. (Ray) DesOrmeaux, PE

National election

ASCE has made it exceptionally easy for members to vote in its national election. A member may elect to vote either by paper, mail-in ballot, or through the internet with an *e-signature*. If you are not aware of your personal e-signature, you may access the ASCE web site for information on how to obtain it. In past national elections, there has been a low percentage of members voting. Let's attempt to change that in this election by casting our individual vote and encouraging fellow members to do the same.

The Louisiana Section is part of Region 5. This year the Region has two candidates for Region Director of which one is Norma Jean Mattei, PE, the current Region 5 Governor from the Louisiana Section, and the other is Jorge A. Jaramillo, PE, the current Region 5 Governor from the Florida Section. The Louisiana Section sent a nomination letter on behalf of Norma Jean on February 23, 2008. Voting ends August 13, 2008.

PE exam review

The ASCE live PE exam review course on the web is designed to aid civil engineering interns in preparing to successfully pass PE exam. Taught by a team of experienced PE exam review instructors, the course will be presented in a series of 12 two-hour modules held over a 6-week period. The popular ASCE live web seminar format will be used. The Louisiana Section, with the Acadiana, Baton Rouge, and New Orleans Branches is coordinating plans in each area for presenting this exam review course at a very reasonable cost to participants. All civil engineering interns in the Section who are preparing to sit for the PE exam in the near future are hereby encouraged to contact the sponsoring ASCE Branch in their respective area to register.

Section Operating Guide

With the assistance of long-time member and Section journal editor, Jim Porter, the Section's Operating Guide has been reviewing and revised after a several years of being a *static* document. The Section's committee chairs and the Branch Presidents are also reviewing various sections of the document, and revising its contents to reflect current operating practices where appropriate. The revised document will be distributed to the Section Board of Directors for review and comment during its next meeting scheduled in August.

Body of knowledge

During the Louisiana Civil Engineering Conference and Show sponsored by the New Orleans Branch and the Louisiana Chapter of the American Concrete Institute scheduled to be in Kenner September 24-25, 2008, there will be a 2-part session on the body of knowledge (BOK) related to ASCE Policy Statement 465 - Academic Prerequisites for Licensure and Professional Practice. It will be presented by ASCE members Jeffrey S. Russell, PE, Kenneth J. Fridley, PE, and Kenneth L. McManis, PE, that have been substantially involved with its development and are quite knowledgeable of the subject. It is important for all ASCE members to become familiar with the initiatives and goals of the BOK. This is the second opportunity for Section members to attend a session addressing the BOK in this year, and all members are encouraged to attend and become familiar with the issues. Russell, who made the previous presentation during the 2008 Annual Spring Meeting and Conference in Lafayette, has been a key leader in the development of the BOK and ASCE Policy Statement 465.

For many years, ASCE has studied the issues concerning future educational requirements of for civil engineers, including the types of education and experience required to obtain professional licensure and recognition. Your Section President authored an article published in the November 1995 issue of this journal that addresses the issues that future civil engineering graduates may face.

Leadership Conference

Each of the ASCE student chapters in Louisiana will be awarded a $700 grant from the Section to offset the expenses to send delegates to the workshop for student chapter leaders and the ASCE Eastern Regional Younger Member Council meeting to be held in conjunction with the Multi-Regional Leadership Conference for Regions 1, 2, 4 and 5 scheduled for February 6-7, 2009 in Cherry Hill, New Jersey. The Conference that also features a workshop for section and branch leaders is an important element for the development of the current and future leaders in the ASCE. It provides opportunities for section, branch, and student chapter members in the 4 regions to network and attend outstanding presentations on proven leadership techniques and activities.

The Section traditionally sends the President Elect to this conference. Each Branch is also encouraged to send delegates. The ASCE notes that the branches that have traditionally sent representatives to these annual conferences have experienced excellent results and renewed member participation in subsequent years.

– Career Benchmarks –

Section members **Matthew J. Granberry**, PE, **Nathan Earl Jordan**, PE, **Brett A. Misenheimer**, PE, **Byron D. Racca**, PE, **John C. Savoie**, PE, and **Kelly C. Tucker**, PE recently earned their professional engineering license in Louisiana. If you are in contact with any of them, please offer your congratulations on thier accomplishment.

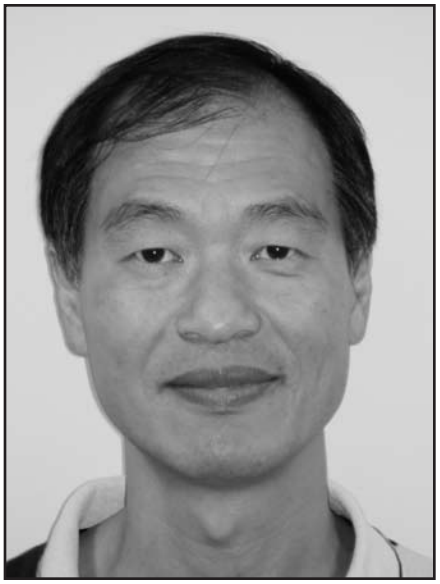
Louisiana residents **Daniel E. Beyke**, PE, **Akhilendra S. Chauhan**, PE, **Lori Ann England**, PE, **John A. Gates**, PE, **Bruce J. Hix**, PE, **Robie J. Lasseigne**, PE, **Charles W. Munce**, PE, **Jennifer R. Nicaud**, PE, **Brian D. Nunes**, PE, **Marcus N. Redford**, PE, **Nina J. Reins**, PE, **Patrick J. Shepherd**, PE, **Steven R. Skeele**, PE, and **Dishili S. Young**, PE recently earned their professional engineering license in Louisiana. They are civil engineers or in a related discipline and they 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 any of them wish to join and/or find out more about the ASCE, they are hereby invited to visit the ASCE national website, http://www.asce.org. If you are in contact with any of these engineers, please consider formally introducing them to the Section by inviting them to attend a branch membership meeting as your guest.

Editor's note: The environmental, structural and architectural engineering disciplines licensed by the Louisiana Professional Engineering and Land Surveying Board may be considered closely related to civil engineering. As of June 2008, the active engineering licenses conferred by the Board were approximately 4871 in civil, 706 in environmental, 105 in structural and 17 in architectural.

About the cover: *The need for a larger database from a more extensive load testing program for precast prestressed concrete test piles is discussed in the feature article. A test pile installation and test over the waters of Lake Ponchartrain are depicted. This load test is for a 36 inch square precast prestressed concrete pile. The load test is a Statnamic load test that is part of the pile load test program for the I-10 Twin Span bridge that is being replaced following the extensive damage to the existing bridge during the coastal surge caused by Hurricane Katrina.*

Implementation of LRFD driven pile design

By Ching-Nien Tsai, PE



Abstract

The American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA) have spearheaded a change in the design philosophy from *allowable stress design* (ASD) to *load and resistance factor design* (LRFD) for highway bridge structures and foundations. The implementation of this change greatly impacts the practice of geotechnical engineering. The AASHTO *LRFD Bridge Design Specifications* referred to herein as the bridge specifications provides some guidelines to the LRFD method, but offers very little direction in procedures to assist in LRFD implementation. The resistance factors in the bridge specifications for its geotechnical applications are very conservative in comparison to the current ASD practice.

Presented herein is the background for — and the effort of — the Louisiana Department of Transportation and Development (DOTD) in the calibration of the resistance factors for its driven pile design. In comparison to the AASHTO resistance factors, it will be shown that the DOTD calibration results in resistance factors that are much closer to the traditional ASD practice. Also presented are the LRFD current implementation efforts by DOTD along with the implications of this implementation.

Introduction

Current geotechnical practice uses the ASD method with its *safety factors* to account for the uncertainties. Prior service experience is the basis for safety factor selection without consideration of the inherent variability in the site conditions, test procedures, and design methods. There are several deficiencies associated with the ASD method. The primary deficiency is that it does not uniformly define the reliability or risk level of the failure of the foundation system. Because of this, it is possible and it can be demonstrated that there is a variable risk level at which a design will fail to perform using ASD and its customarily safety factors.

The ASD gives a false impression of the safety of a design because of the stochastic (random) nature of both the load and the resistance. The randomness may be caused by uncertainty in the measurements, inherent material difference, or the assumptions made in a design method. This uncertainty is especially significant for soils since Mother Nature does not necessarily produce a homogeneous soil naturally. To overcome the deficiency of the conventional safety factors in ASD accounting for uncertainty, the LRFD method accounts for an acceptable risk level using reliability analysis. The LRFD method does not end with the design. Its reliability analysis extends to the construction process and life cycle cost analysis. The current AASHTO LRFD incorporates construction verification testing but it does not include life cycle cost analysis.

Reliability analysis

The reliability concept for structural design is not new. The concept originated in Russia in the late 1920s (NCHRP 2004) when it was presented using a probability of failure as the criterion for structural design. This reliability-based design concept was introduced to the United States in the late 1940's. The American Petroleum Institute first included LRFD in a practice oriented document (API RP2A-LRFD) in 1989. Five years later, the American Institute of Steel Construction published its first reliability-based design code in 1994 followed by the American Concrete Institute in 1995. The AASHTO published its first LRFD bridge specifications in 1994 with its most recent version published in 2007.

Reliability analysis in geotechnical application (Duncan 2000, Harr 1984, Tsai 2000) has been used to compensate for uncertainty — the problem associated with using the safety factors in the ASD method. However, implementing the reliability analysis of the LRFD method into the routine geotechnical design practice has encountered serious road blocks. The perception of practicing geotechnical engineers that there is extra work and data required to estimate the stochastic properties of the soils is the primary impediment to implementation. Other impediments contributing to this reluctance to implement the LRFD method are

- a lack of understanding of statistics and probability
- foundations of existing facilities appear to be safe and
- inertia or resistance to change.

In a discussion about the LRFD between a well known consulting engineer and the author, the viability of the LRFD was questioned because it was anticipated that there will be insignificant savings and possibly higher costs associated with it. What he fails to understand is that the goal of implementing the LRFD method is to provide a technological platform to manage the risk level for failure in constructed facilities.

Conventional methods

Frequently, practicing design professionals select conservative soil parameters for a design in addition to the use of the safety factors to improve the safety in the design. This gives a false sense of confidence in the safety of the design because of the perception that safety is increased by applying a higher safety factor. In addition, the results may be unnecessary conservatism. Using a reliability-based design, one designs for a controlled risk level. This risk level may be adjusted based on the importance of the structure or the likely impact on property and human life its failure may have. The contri-

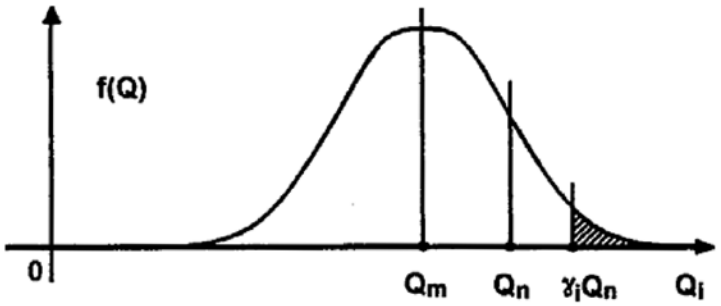


Figure 1. Probability density function for load.

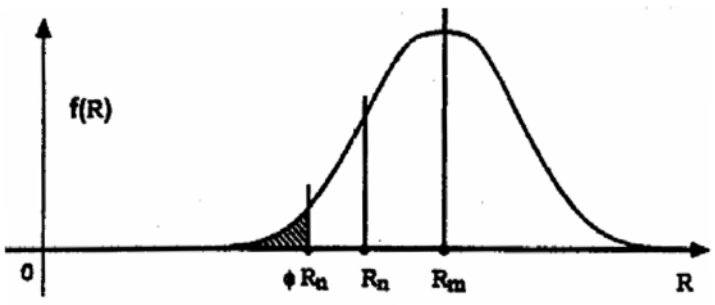


Figure 2. Probability density function for resistance.

Ching-Nien Tsai, PE, is currently employed by the Louisiana Department of Transportation and Development in its Pavement and Geotechnical Section. His duties in addition to regular design projects, include the development of the Geotechnical Design Manual, internal technical training, and special projects. Tsai earned his BS in civil engineering in 1978 from National Chung-Hsing University and his PhD in civil engineering in 1999 from LSU. He has 22 years experience in geotechnical engineering practice of which 20 years were in private practice and 2 years employed by the Louisiana DOTD. Tsai is a member of the ASCE and he is a licensed engineer in Louisiana, Texas and Mississippi.

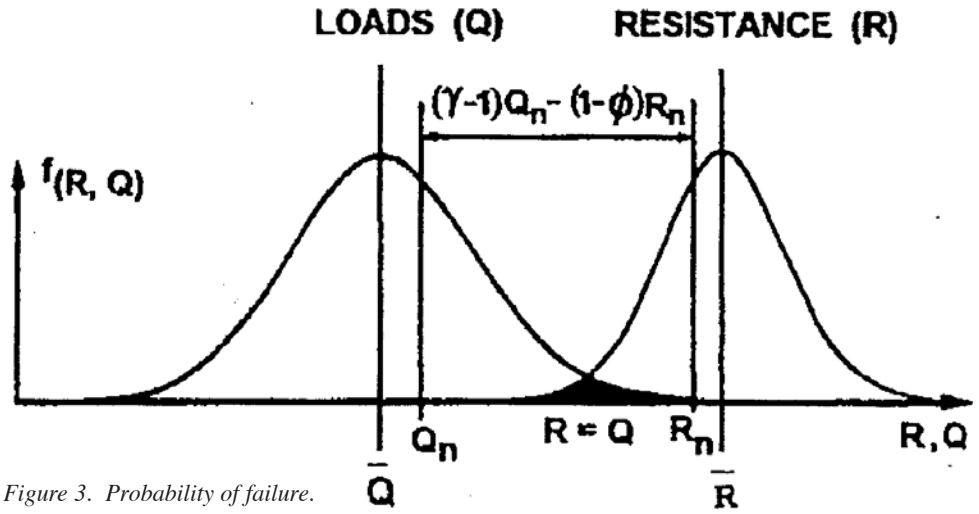


Figure 3. Probability of failure.

bution to the risk level associated with additional or arbitrary increases applied to soil parameters can be estimated and appreciated relative to the need.

Implementation

The effort of AASHTO in facilitating the implementation of its LRFD method for bridges has forced the geotechnical engineering community to accept the reliability-based design. To simplify the LRFD reliability analysis and make it more user friendly, the method greatly improves the usability of the reliability-based design. The only knowledge of statistics and probability needed to use the AASHTO LRFD formulation is the ability to estimate two elementary statistical properties — the mean and the standard deviation.

The AASHTO LRFD method requires the geotechnical engineer to estimate the uncertainties associated with the individual load components and resistance parameters and assign factors to account for their individual uncertainties. Individual *load factors* are applied to each load component applied to the foundation to account for its variability while individual *resistance factors* are applied to each resistance parameter used in the foundation design method to account for its variability in estimating the resistance of the foundation. The goal is to optimize the design between the superstructure and substructure and thereby achieve a predetermined and consistent risk level for both.

AASHTO specifies the design risk level for failure to be 1/1000 or, in other words, the *probability of failure* is 0.1 percent for the design load conditions applied to the structure and foundation and resistance of the same to failure. Note that failure does not necessary imply the collapse of a structure or foundation system. It simply implies a failure of the structure or foundation system to perform according to the individual parameters evaluated in the design.

LRFD concept

A good discussion of the reliability concept was presented by Chang (2006). In summary, the reliability-based design takes into account the statistical variability and the probability density functions of all the load components applied and the resistance parameters. Given a load, Q — the sum of factored load components — and a resistance, R — a factored resistance parameter — the *load factors* (γ_i) and the *resistance factor* (φ) can be calculated so that the design meets a specified probability of failure.

The probability of failure is selected by a code development professional through extensive research into the experience with constructed facilities and the current design practice. The probability of failure is chosen by the AASHTO is one not to exceed 1/1000 for non-redundant pile foundations. The target failure probability for redundant piles — those in a pile group is 1 percent or 1/100. This leads to the estimation of rational design factors consistent with the probability of failure. Alternatively, this process can target a quantity called the *reliability index* related to the probability of failure. An LRFD design code requires the development of the load factors and resistance factors such that the overlapping area between the load and resistance probability density functions is no greater than 1/1,000 — the code accepted probability of failure. The probability density functions for all load components and resistance parameters are demonstrated conceptually in Figures 1 and 2 for load and resistance respectively and they define the variability of load and resistance.

	Load Factor	Bias	COV
Live Load	1.75	1.15	0.2
Dead Load	1.25	1.05	0.1

Table 1. Load distribution properties used for resistance calibration.

The probability of failure as shown in Figure 3 is defined as the probability that the design load, Q_m given that

$$Q_m \geq \Sigma \eta_i \gamma_i Q_i \quad (1)$$

where

η_i = load modifier for ductility, redundancy and importance
γ_i = load factors
Q_i = load component

exceeds a selected value of material resistance, R_m given that

$$R_m = \varphi R_n \quad (2)$$

where

φ = resistance factor
R_n = nominal strength

or where R – Q is a negative and it represented by the shaded area shown in Figure 3. One can design for a pre-determined risk level once the variability of the load components and resistance parameters are determined. The statistical analysis procedure to evaluate the reliability level is quite tedious for routine use. The AASHTO LRFD method simplifies this procedure by representing the statistical properties of the load components and resistance parameters by using two parameters — load and resistance factors. These pre-calibrated factors can be found in the AASHTO *LRFD Bridge Design Specifications* (2007). The designer, without needing the knowledge of statistics, can properly perform a risk analysis by simply using the pre-calibrated load and resistance factors.

Field testing during construction

The goal of traditional field quality control and quality assurance in the ASD method is to provide field verification tests such as the pile load tests to verify that a minimum value is achieved that includes a pre-determined safety factor based on the ASD procedures. Therefore, the amount of field verification testing does not

Condition/Resistance Determination Method		Resistance Factor
Dynamic analysis	Dynamic determined driving criteria with signal matching at the beginning of restrike conditions only of at least one production pile per pier.	0.65
	Wave equation analysis without pile dynamic measurements or load test, at end of drive conditions only	0.40
	FHWA – modified Gates dynamic pile formula (end of drive condition only)[1]	0.40
	Engineering News Record dynamic pile formula (end of drive condition only)[2]	0.10
Static analysis methods	Skin friction and end bearing: clay and mixed soils	
	α -method (Tomlinson, 1987; Skempton, 1951)	0.35
	β -method (Esrig & Kirby, 1979; Skempton, 1951)	0.25
	λ -method (Fijayvergiya & Focht, 1972; Skempton, 1951)	0.40
	Skin friction and end bearing: sand	
	Nordlund/Thurman (Hannigan et al., 2005)	0.45
	SPT-method (Meyerhof)	0.30
	CPT-method (Schmertmann)	0.50

[1] DOTD requires approval for using this method.
[2] DOTD does not allow the use of this method.

Table 2. AASHTO resistance factors for driven piles.

Number of Static Load Tests per Site	Resistance Factor Site Variability		
	Low[a]	Medium[b]	High[c]
1	0.80	0.70	0.55
2	0.90	0.75	0.65
3	0.90	0.85	0.75
≥4	0.90	0.90	0.80

[a] Site COV <0.25 [b] Site 0.25≤COV≤0.40 [c] Site COV≥0.4

Table 3a. (above) AASHTO resistance factors for projects with static load tests.

Site Variability	Low[a]	Medium[b]	High[c]
Number of Piles Located within Site	Number of Piles with Dynamic Tests and Signal Matching Analysis Required (BOR)		
≤15	3	4	6
16-25	3	5	8
26-50	4	6	9
51-100	4	7	10
101-500	4	7	12
≥501	4	7	12

[a] Site COV <0.25 [b] Site 0.25≤COV≤0.40 [c] Site COV≥0.4

Table 3b. (right) AASHTO resistance factors for projects with dynamic load tests and signal matching analysis.

impact the ASD method nor do the results as long as the outcome meets the minimum criteria. Under the ASD method, the results of the testing may impact the type or size foundation to meet the safety factor requirement.

LRFD is a design *philosophy* not a design method. The resulting design process is simply the transformation reflecting the philosophical change. As such, the design process is only one part of the solution. To reasonably ensure that the reliability of a structure is as designed, the reliability concept has to extend to field testing in the construction phase. However, variability in construction is an integral part of design method in the LRFD concept. The field testing program has to be designed to reasonably assure that the variability achieved in the construction process does not exceed the variability assumed for it in the design method. To accomplish this, the number of verification tests and the interpretation of the results are important to achieve the required reliability level. The ultimate goal for construction testing is to provide feedback to be incorporated into future design process revisions where the results of the construction testing may impact the selection of the resistance factor used in the design formulation.

AASHTO LRFD calibration

Recognizing that other factors also contribute to the reliability level selection, AASHTO LRFD procedures incorporate a factor η to account for importance, ductility, and redundancy. The AASHTO LRFD formulation is as follows:

$$R = \varphi R_n \geq \Sigma \eta_i \gamma_i Q_i = Q \qquad (3)$$

where

- R = factored resistance
- R_n = nominal strength (e.g. ultimate bearing capacity)
- ΣQ_i = nominal load effect
- φ = statistically-based resistance factor
- η_i = load modifier for ductility, redundancy and importance
- γ_i = statistically-based load factor and
- Q_i = load component and
- Q = factored load.

AASHTO has published the load factors and modifiers. Since structural materials are typically manufactured by nationally recognized standard specifications in statistically controlled processes, they are more likely to behave with predictable variability and less likely to vary from region to region. Because of this, the AASHTO published resistance factors for these materials are generally accepted by most state transportation agencies. However, the practice of geotechnical engineering in state transportation agencies varies as do the soils in their regions. Therefore, AASHTO encourages local calibration for the resistance factors for the geotechnical applications. To calibrate the resistance factor, AASHTO used the load distribution properties that are tabulated in Table 1 where the Bias is the spectrum bias and the ratio of the measured value and the predicted value in the probability density function and the COV is the coefficient of variation, and the ratio of the standard deviation and the mean of the loads in the probability density function.

Another required parameter for calibration is the dead load to live load ratio. The greater this ratio is, the smaller the resistance factor becomes. However, once this ratio exceeds 3, the change in the resistance factor is insignificant. This ratio depends on the type of bridge structure and the span length. Longer bridge spans produce greater dead load to live loads ratios. The published AASHTO resistance factors are based on the dead load to live load ratio of 3. The AASHTO resistance factors for static pile calculations are provided in Table 2. These factors are rounded down to the nearest 0.05 increment and they are based on some assumed redundancy built into the foundation resulting in a probability of failure used in the calibration approximated to be 1 percent. To achieve the .01 percent probability of failure, AASHTO resistance factors require a 20 percent reduction for non-redundant foundations.

Soil properties depend significantly on many local conditions such as geology, stress history, inclusions and secondary structures and can be highly variable across different geologi-

Condition/Resistance Determination Method	Resistance Factor	Equivalent Safety Factor
Static load test	0.70	2.0
Dynamic determined driving criteria with signal matching at the beginning of restrike conditions only of at least one production pile per pier.	0.65	2.1
Wave equation analysis without pile dynamic measurements or load test, at end of drive conditions only	0.40	3.4
FHWA – modified Gates dynamic pile formula (end of drive condition only)[1]	0.40	3.4
Engineering News Record dynamic pile formula (end of drive condition only)[2]	0.10	15
Skin friction and end bearing: clay and mixed soils		
α-method (Tomlinson, 1987; Skempton, 1951)	0.35	3.9
β-method (Esrig & Kirby, 1979; Skempton, 1951)	0.25	5.6
λ-method (Vijayvergiya & Focht, 1972; Skempton, 1951)	0.40	3.4
Skin friction and end bearing: sand		
Nordlund/Thurman (Hannigan et al., 2005)	0.45	3.1
SPT-method (Meyerhof)	0.30	4.6
CPT-method (Schmertmann)	0.50	2.8

[1] DOTD requires approval for using this method.
[2] DOTD does not allow the use of this method.

Table 4. Equivalent safety factor based on AASHTO resistance factors.

Square PPC Pile Size (mm)	Pile Type		Predominant Soil Type		
	Friction	End-Bearing[a]	Cohesive	Cohesionless	Limited Information
360	18	0	16	2	0
410	5	0	3	0	2
610	9	0	6	3	0
760	10	0	5	5	0
Total	42	0	30	10	2

[a] End bearing exceeds 50% of pile capacity

Table 5. Summary of the pile load test database used for resistance factor calibration.

(Continued on Page 19)

Branch News and Leadership Forum

BATON ROUGE

By Robert W. Jacobsen, PE, President

Teaming together with the Louisiana Department of Natural Resource and the LSU Department of Civil and Environmental Engineering, the Branch, sponsored the first Louisiana Coastal Engineering Conference. It was held May 29-30 in the Hilton Capitol Conference Center. Some of the key presentations included:

- Coastal processes by David R. Basco, Old Dominion University
- Fundamentals of wave theory and tides by Jim Chen, LSU
- Dredging equipment and costs by Bob Randall, Texas A&M
- Developments of the Louisiana Coastal Protection and Restoration Authority and related programs by Garret Graves, Director of the Governor's Office of Coastal Affairs
- Future of coastal engineering in Louisiana by Chris Knotts, Louisiana DNR Coastal Engineering Division

Those in attendance were treated to a series of many excellent technical presentations describing restoration projects. The Conference has received rave reviews and the Branch and the newly reorganized Coastal Protection and Restoration Implementation Team hope to organize more conferences in the future!

The June membership meeting was the Branch's annual Past Presidents luncheon. We were pleased and honored to have 19 of our Branch Past Presidents in attendance, including Louis J. Capozolli, PE, the first president of the Branch in 1962. We were all saddened to learn of the recent death of Leo "Bill" Gagnon, PE, who was president of the Branch in 1984-85. Paul B. Fossier, PE, who is also a past president of the Branch (1988-89) made the technical presentation and may have set a new precedent for presentations by past presidents.

The 2008 Branch awards recipients for outstanding civil engineers were announced during the June Branch membership meeting. They will also serve as the nominees from the Branch for the corresponding Louisiana Section outstanding civil engineer awards. The official presentations of the commemorative plaques for the Branch awards will be made during the membership meeting scheduled for August 28. The recipients are:

C. Carter Brown, PE, Wall of Fame
Gordon P. Boutwell, PE, Lifetime Achievement
Billy R. Prochaska, PE, Outstanding Civil Engineer
Kim M. Garlington, PE, Outstanding Government Civil Engineer
George Voyiadjis, PE, Educator of the Year
Jeffrey L. Duplantis, PE, Ourtreach
Adam M. Smith, PE, Young Civil Engineer
Rudolph A. Simoneaux, EI, Young Government Civil Engineer

Two Branch membership meetings and luncheons were held May 15th and June 19th. The May meeting was a joint meeting with the Baton Rouge Chapter of the Louisiana Engineering Society. Hats off to their board for organizing a fantastic joint meeting. It featured the technical presentation, "Establishing Accurate Survey Control Points Inexpensively Using the Recently Expanded CORS Network" presented by Roy Dokka, Director of the Center for Geoinformatics at LSU. The second meeting featured a presentation of the "Status of Louisiana DOTD Bridge Projects" by Paul B. Fossier, PE, an Assistant State Bridge Design Engineer, Louisiana DOTD.

SHREVEPORT

***Rusty L. Cooper, PE, President* — No Entry**

ACADIANA

By Joseph P. Kolwe, Jr., PE, President

The start of a new administrative year for Branch is near. The election of the new officers for the Branch Board of Directors will take place in August/September and nominees are actively being sought for the office of Secretary. Please begin to consider your fellow members and yourself as potential nominees who may be prepared to meet the challenge and service to be an elected leader in our profession.

We will soon be sending out information about the Branch membership meeting to be scheduled in August. This will be the meeting where nominations for the Branch offices will be opened and accepted from the floor followed by the election of the officers to serve on the Branch Board of Directors for the 2008-2009 administrative year. The current Board is in the process of planning a tentative membership meeting schedule for the 2008-2009 administrative year. The schedule is being planned with the intent to facilitate the attendance of more Branch members by better enabling them to attend. To this end, any member of the Board is open to considering and relaying your suggestions.

On a local level, the Branch will be continuing its student out-reach program with the local high schools. To sustain this program, we will be seeking Branch members to volunteer their services.

The Branch Board would like to congratulate the several nominees from the Branch for the various Section Membership Awards. The Section Membership Awards ceremonies will be held during the Section Annual Meeting scheduled to be in Shreveport September 19, 2008. These exceptional Branch members have truly demonstrated outstanding leadership and involvement in the ASCE as their fellow members in the Branch have taken notice in nominating them. The 2008 Acadiana Branch nominees are:

- **Shirley A. Stutes**, PE, Lifetime Achievement
- **Allison J. "Sonny" Launey**, PE, Outreach
- **Raymond J. Reaux**, PE, Outstanding Civil Engineer
- **Luke Hebert**, EI, Outstanding Young Civil Engineer, and
- **Joshua P. Stutes**, PE, Outstanding Young Government Civil Engineer.

Congratulations to all of these nominees and good luck in Shreveport.

Did you know...

...that a report from the *Urban Institute* (http://www.urban.org) "Into the Eye of the Storm: Assessing the Evidence on Science and Engineering Education, Quality, and Workforce Demand" *10/29/07* finds that American students are as good and often score better than students from many leading countries? Authors Harold Salzman and Lindsey Lowell claim that in the United States

- Students well-prepared to compete in high-tech fields are plentiful.
- Students do well and are gaining ground compared to math and science students abroad.
- Colleges graduate far more scientists and engineers than are hired each year — triple the growth rate of the labor market.
- The science and engineering labor market is strong.
- Colleges and universities grant an annual average of 435,000 bachelor's, master's, and doctoral degrees to domestic students studying science and engineering.
- The students who make up a large segment of the population needed to fill the millions of jobs that keep the economy productive and efficient are among the poorest performers — *a serious weakness in education.*

...that there are about 2.1 million engineers in the United States and about 400,000 to 450,000 of them (20 percent) hold the 750,000 engineering licenses issued in the United States. An engineer does not have to be licensed to be a member of the ASCE.

NEW ORLEANS

By Ronald L. Schumann, Jr., PE, President

This is the year that the Branch essentially returns to its normal operations; 3 years after our lives in the New Orleans region were so dramatically affected by Hurricane Katrina. As it is now well known, the Branch operations were brought to a complete halt in the aftermath of the storm during the late months of 2005. Operations remained disrupted well into the early months of 2006. The results of the time and energy invested during this period by those often serving shorthanded in the Branch leadership that includes the Board and the various appointed committees was clearly evident in the many events, seminars, meetings and other activities that emerged during these trying months. The time and energy that was invested is even more impressive when it is appreciated that it was often divided between the business of the Branch and getting personal lives back on track in the aftermath of the storm.

These unusual efforts dedicated to our profession are the reason for the return of the Branch leadership back to normal operations this year. It has been extremely gratifying to witness and to be a part of the progress the Branch has made since late 2005 to return to normal operations. On behalf of the Branch's membership, I wish to express their gratitude to which I humbly add my own for the efforts of our Branch leadership and all of the Branch members who served in the aftermath of the storm including this year's leadership and the excellent programs it is providing to make this year such a success. Without their initiative, service and support that have come to be expected but surely not taken for granted, the progress reported here would not be possible.

Billboard

The Branch billboard committee is actively developing plans for a billboard to promote the ASCE and the civil engineering profession. The billboard will be funded by the national ASCE State Public Affairs Grant (SPAG) program through — and supplemented by — the Section. It is based on a Branch proposal that was approved as part of the SPAG program. The financial support provided by the SPAG program was established by the ASCE to encourage public relations and outreach activities at the Section and Branch level. These activities are to enhance the image of civil engineers as leaders and experts on America's vital infrastructure systems and encourage advocacy on issues important to civil engineers.

Current plans include both a digital billboard that delivers a number of rotating messages and a standard billboard. The company we are working with has offered to throw in the standard billboard at no additional cost. Nathan Junius who chairs the committee has requested ideas from the Branch membership for messages that could be displayed on the billboard to promote the civil engineering profession. It has been decided to make his request into a contest. Those members who submit the messages that are chosen to be displayed will receive a free lunch at a branch meeting during the upcoming year. Please send suggestions to Nathan at njunius@lhjunius.com.

Board of Directors

The Branch Board of Directors for the 2008-2009 administrative year was elected during the May Branch membership meeting and it will be installed at an installation banquet tentatively scheduled for Thursday, September 25, 2008. The new Board members are

- Nathan J. Junius, PE, President
- Benjamin M. (Ben) Cody, PE, President-Elect
- Margaret S. Adams, PE, Vice President
- Malay Ghose Hajra, PE, Treasurer
- James R. Martin, Jr., PE, Secretary
- Donald E. Barbe, PE, Director
- Reid L. Dennis, PE, Director, and
- Ronald L. Schumann, Jr., PE, Past President.

Awards

The Board approved the recipients of the Branch outstanding member awards recognizing the exceptional achievements of these civil engineers in the Branch community. They are

- **Robert A. Turner, Jr.,** PE, Outstanding Government Civil Engineer
- **Daniel L. Bolinger**, PE, Outstanding Civil Engineer
- **Anthony J. Lamanna**, PE, Outstanding Young Civil Engineer
- **Subhash V. Kulkarni,** PE, Outreach
- **William W. Gwyn**, PE, Lifetime Achievement
- **Thomas L. Jackson**, PE, Wall of Fame and
- **Reid L. Dennis**, PE, President's Award.

These Branch awards were presented and the recipients honored during the July Branch membership meeting and luncheon that was held at Commander's Palace.

Life Members

Also during the July Branch membership meeting, the following Branch members having recently achieved ASCE Life Member status were recognized and they were presented with their Life Member certificates to commemorate the event:

- **Ataur R. Bhatti**, PE
- **Thomas W. Wells**, PE and
- **Laurence L. Lambert**, PE.

Other Branch members that also achieved Life Member status include:

- **Fernando Estevez**, PE, and
- **Robert B. Anderson**, PE.

Daniel Bolinger (right) the Branch Outstanding Civil Engineer of the Year receives his award from President Schumann.

Robert Turner (right) the Branch Outstanding Government Civil Engineer of the Year receives his award from President Ronald Schumann.

Tony Lamanna (right) Branch Outstanding Young Civil Engineer of the Year receives his award from President Schumann.

Tom Jackson (right) the Branch Wall of Fame recipient receives his award from President Schumann.

SEI New Orleans Chapter Report

By Om P. Dixit, PE, Newsletter Editor

In May University of New Orleans Student Chapter solicited financial aid from the Chapter, and from the Section and the Branch. It was immediately needed to partially defray the travel expenses for its steel bridge team to make the trip to the national steel bridge competition hosted by the University of Florida in Gainesville, Florida. In response to the request, the Chapter donated $1000.

Chapter members provided engineering oriented entertainment for the children in the KID'S TENT during the New Orleans Jazz and Heritage Festival held in April. Norma Jean Mattei coordinated the services of the volunteers, who donated their time in support of this good cause and public outreach effort for the profession.

A Chapter hosted seminar titled *What Engineers Should Know About Contracting* was presented June 19, 2008. This seminar featured guest speakers Robert S. Boh, CEO, BOH Brothers and Larry Gibbs, CEO, Gibbs Construction, and moderators William H. Sewell, Jr., PE, and Thomas M. Smith. The moderators asked pre-prepared questions posed by the members and the speakers responded to them. The major topics addressed concerned

- design-build projects
- performance based specifications
- quality control by contractors
- value engineering
- partnering workshops
- contractor preferences in engineering plans and
- suggestions for engineers to make plans clearer.

All of the over 100 members in attendance appreciated the valuable advice and insight provided by both speakers who are principals of major construction firms from New Orleans area.

There are two future seminars being planned by the Chapter. The dates scheduled and topics announced for these future seminars being planned are tentative at this time and as more details are known and the plans are firmed up and finalized the information will be posted on the New Orleans Branch website.

The seminar titled *Local Building Design Codes and IBC 2008 Code* is scheduled for August 12, 2008. Several building officials from the parishes of Orleans, Jefferson, St. Tammany, and St. Bernard will be invited to share their knowledge and experience and discuss the latest building codes including International Building Code 2008. The presentation will be followed by a question and answer session. This discussion is expected to help the engineering community to better understand and interpret IBC 2008 and appreciate its impact on structural design.

The *Annual Marine Structure Seminar* is scheduled for October 16, 2008. The guest speaker planned at this time is Paul Verowsky. He will discuss the API RP2A Offshore Design Code changes and its effect on the design of offshore structures.

The Chapter is looking for interesting topics and speakers for future presentations. Members with expertise in above areas are welcome to join the Chapter's Executive Committee. To make any suggestion or express an interest in joining the Executive Committee please contact the Executive Committee Chairman Mike Choudhry at Mike_Choudhry@URSCorp.com.

All seminars sponsored by the Chapter are held at the University of New Orleans. Seminar dates, and registration and other pertinent information can be found on the New Orleans Branch website at www.asceneworleans.org. To add your name to the Chapter's mailing list, email Om P. Dixit at om@fenstermaker.com.

From the left are Tom Smith and Bill Sewell who served as the panelists for the seminar, "What engineers should know about contracting"; Mike Choudhry, Chairman of the SEI Chapter; and guest speakers Larry Gibbs and Robert Boh.

- Observation -

Relationships:

When people say you're not part of the team, it means they want you to be part of the fan club. Susan Leal was fired as general manager of the San Francisco Public Utilities Commission. She claims that she was forced out by Mayor Gavin Newsom because she was too independent. She got along well with members of the Board of Supervisors when he could not. - *San Francisco Chronicle — Relationships 101*: A key to a subordinate's success includes responding well and consistently to the expectations and needs of the supervisor. Supervisors generally appreciate independence and aggressiveness in their subordinates because their success reflects well on them. There can be a number of motives for a negative reaction by a supervisor toward the aggressive and independent behavior of a subordinate. It can be founded on everything from inappropriate jealousy to distrust. Both subordinate behavior traits are good but they have to be framed in a healthy team relationship to be effective. Most supervisors need to be in the loop to some degree in subordinate transactions. It is a principal responsibility of a subordinate to discover and satisfy the supervisor's needs. An effective subordinate will develop a conservative relationship with the supervisor by keeping in close communication as the clarity and trust needed in their relationship evolves and reveals itself. It appears that Susan Leal was perceptive enough to appreciate the value of her assets but not her responsibilities in her relationship with Mayor Newsom. Her consequences explain clearly why it is the primary responsibility of the subordinate to *cultivate* an effective relationship with the supervisor founded on trust and clarity. - *Editor*

❖ Quote ❖

Global Warming: *I still have a hard time envisioning how we will know when the apocalypse (due to global warming) arrives. Nobody will ring a bell to announce that a climate-change event has begun, and it is easy to ignore the signals that the climate is changing. After all, we've always had extreme weather, and it's possible that what signifies the point of no return will not be in the realm of weather anyway but rather a derivative effect such as a financial crisis or crop failure... At some point it will dawn on us that the weather is making us poorer and sicker... We know what we know, and we still do nothing. That's going to have future historians scratching their heads.*

- Eugene Linden, author
Sunday Advocate 8/6/06

Canoe and bridge teams compete nationally

The steel bridge competition teams from the University of New Orleans and the Louisiana State University Student Chapters were the top two finishers in the steel bridge competition held during the 2008 Deep South Conference hosted by the LSU ASCE Student Chapter in Baton Rouge April 3-5, 2008. This qualified both of them to compete in the 2008 ASCE/AISC National Student Steel Bridge Competition that was hosted by the University of Florida in Gainesville, Florida May 23-24, 2008. In the field of 42 competitors that qualified from their respective regional competitions the LSU and UNO teams placed as follows:

Team Category:	**LSU**	**UNO**
Overall	**17**	**23**
Economy	18	28
Display	37	14
Construction Speed	12	32
Stiffness	19	12
Lightness	20	5
Efficiency	19	8

The concrete canoe competition team from the Louisiana Tech University Student Chapter finished first place in the concrete canoe competition during the 2008 Deep South Conference. This qualified the team to compete in the 2008 National Concrete Canoe Competition hosted by the École de Technologie supérieure in Montreal, Canada June 19-21, 2008. In a field of 22 competitors they finished 21st. There are no details about their placement in the various competition categories at this time.

UNO

By Christopher Rau

The 2007-08 academic year was a major turning point for the Chapter. After a number of years of poor performance in the regional competitions, and thus a long absence from competing at the national level, and in the midst of continuing to deal with the aftermath of Hurricane Katrina, our members this past year decided to make a serious change. We wanted to destroy the notion that the Chapter was no longer capable of succeeding in the regional competitions. Under the leadership of Ali Tareh, captain of the Chapter's steel bridge team qualified for an appearance at the National Student Steel Bridge Competition for the first time in 8 years. Joining him in the effort were teammates Daniel Bobeck, Joe Guillory, Chris Rau, Carlos Zarraga and Daniel Flores, and faculty advisor, Michael D. Folse, PE. The team combined for a 600-hour effort on the project spending the majority of several weekends during the spring semester working from the early morning until late night hours.

The 2008 National Student Steel Bridge Competition was held May 23-24 in Gainesville, Florida hosted by the University of Florida ASCE Student Chapter. A total of 42 schools from across the United States competed. They came from as far away as Alaska and Hawaii to participate in this event.

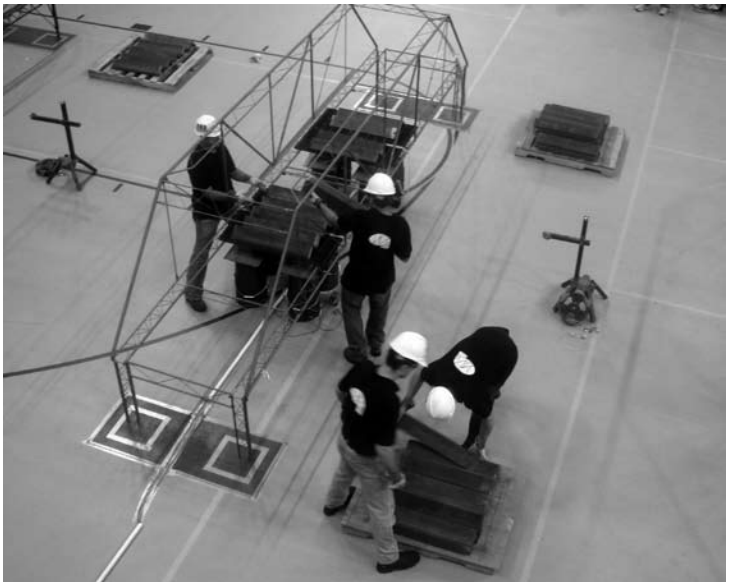
Though the precise rules have changed over the years, the steel bridge competition focuses on fabricating and constructing a 20-foot long steel bridge in a timed competition over a hypothetical river as quickly as possible in a timed competition. The teams begin studying and discussing the rules and thinking of different designs at the beginning of the school year. After extensive review and analysis of different concepts, they finalize the design and begin the fabrication, generally at the start of the spring semester. Following the fabrication, they assemble the bridge and perform load tests so that they are confident that their bridge will pass the load test during the competition. Teams hold numerous practice sessions to select the best builders for the team, and to discover the fastest sequence of construction.

The top two teams from each regional competition are invited to compete at the national event. This year, our team captured first place in the Deep South Regional Championship competition in Baton Rouge securing an invitation to participate in the national competition.

On the afternoon of May 23, all competing teams gathered in the University of Florida basketball arena to assemble their bridges for the aesthetics portion of the competition. While the judges studied the bridges and accompanying posters, team members, faculty advisors, and spectators were allowed to examine the competition bridges from each school. After this, all the teams disassembled their bridges and team captains attended a meeting nearby. Some teams including our's squeezed in a few more timed construction practices in a parking lot that the University reserved off campus.

(Continued on Page 12)

UNO Student Chapter steel bridge team and their supporters attend the awards banquet during the national competition. From the left are Daniel Bobeck, team captain, Ali Tareh, Chris Rau, Daniel Flores, Michael Folse, Faculty Advisor, Carlos Zarraga, Donald Barbe, Chair of UNO Civil and Environmental Engineering Department and Kayode Adewumi.



The steel bridge team is loading the competition bridge with lengths of steel angle to total static test load of 2500 pounds after which the net deflection under the load is measured as a parameter for the stiffness component of the judging.

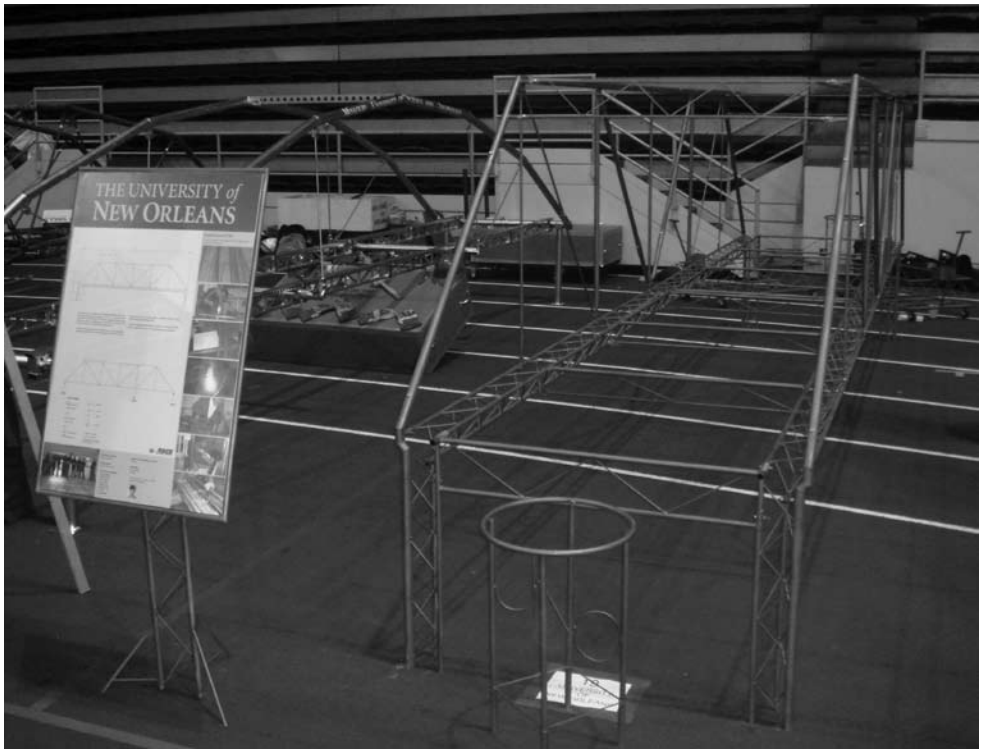
(Continued from Page 11)

The morning of May 24, the team awoke well before sunrise to perform a few final practices. Five construction lanes and 5 load stations were set up in the basketball arena to expedite the competition and allow all 42 teams to finish in time for the awards banquet planned for that evening. Our team was the19th to compete in the timed construction portion. Bobeck and Rau, who served as outside builders, ran quickly between staging yard and the river with components of the bridge and helped Tareh and Guillory, who served as barges, assemble the bridge in approximately 13½ minutes. The team carried its assembled bridge to the next load station that opened and performed the horizontal and vertical load tests. The bridge passed both with the horizontal load test deflection being less than ¼ inch and it supported the 2500 pound static load.

That evening all the teams gathered at the University Center for the Awards Banquet. Fromy Rosenberg representing the American Institute of Steel Construction presented trophies to the teams who finished in the top 3 in each competition category and overall. The University of California-Berkeley captured the national championship. We finished 23rd overall. Though we did not walk away with any trophies, we did walk away with some very respectable rankings in 2 categories — 5th in lightness and 8th in structural efficiency. Most importantly, we returned home with a strong sense of accomplishment and optimism about next year. While in Gainesville, we discovered that some schools did not even know that our chapter was still in operation.

We now hope to be a serious contender in the steel bridge construction event in the coming years. The news of this year's experience should encourage more civil engineering students — especially freshmen and sophomores — to join the effort and participate actively next year. Their continuing participation should help better establish the Chapter as a serious contender in the steel bridge competition for years to come. After working with a substantially limited budget, our team hopes that this year's success will garner more support from the civil engineering community in the area. All of this past year's team members have at least one year before graduation and will be eligible to participate next year. They have decided they will do whatever it takes to give our team a great chance of winning the national crown next year in Las Vegas.

The team is sincerely grateful to the 2 faculty members who were very supportive with this year's effort — Advisor Michael Folse and Donald E. Barbé, PE, chair of the civil and environmental engineering department, who helped with the costs of the trip to Gainesville and traveled with us. We thank the family members and friends who also traveled to support us during this event. We would also like to thank the University of Florida ASCE Student Chapter for its outstanding job of hosting the competition.



The competition bridge is shown assembled and prepared for the display component of the judging.

— Calendar of Events —

September 19, 2008	ASCE Louisiana Section Annual Meeting, Shreveport. For more information visit http://www.lasce.org.
September 11-12, 2008	ASCE Seminar * Pipe and Pipeline Renewal, San Antonio, Texas.
September 18-19, 2008	ASCE Seminar * Engineering Design and Performance of Bioreactor Landfills, Nashville, Tennessee.
September 24-25, 2008	ASCE New Orleans Branch Louisiana Civil Engineering Conference and Show, Kenner. For more information visit http://www.lasce.org.
September 25-26, 2008	ASCE Seminar * Construction Cost Estimating for Civil Engineers, San Antonio, Texas.
September 25-26, 2008	ASCE Seminar * Design of Buildings in Coastal Regions, Pensacola, Florida.
September 25-26, 2008	ASCE Seminar * Residential Land Development Strategies, New Orleans.
September 26, 2008	Louisiana Engineering Society Life Safety Code Seminar. For more information email les@les-state.ogr, Many, Louisiana
October 2-3, 2008	Zweigwhite Structural Engineer's Building Conference and Exposition. For more informationvisit http://events.Zweigwhite.com/building/. Atlanta, Georgia.
October 9-10, 2008	ASCE Seminar * Environmental Bootcamp for Engineers, San Antonio, Texas.
October 16-17, 2008	ASCE Seminar * Strategic Planning, Valuation & Ownership Transitions for Engineering Firms, Nashville, Tennessee.
November 6-7, 2008	ASCE Seminar * Advanced Detention Routing: Improving the Operation & Effectiveness of Detention Facilities, Austin, Texas.
November 6-7, 2008	ASCE Seminar * Perfect Your Negotiating Skills: Increase Your Profitability, San Antinio, Texas.
November 6-7, 2008	ASCE Seminar * Wind and Seismic Retrofit of Buildings, Memphis, Tennessee.
November 13-14, 2008	ASCE Seminar * Design and Evaluation of Highway Bridge Superstructure Using LRFD , Houston, Texas.
November 13-14, 2008	ASCE Seminar * Leadership Development for the Engineer , Dallas, Texas.
November 13-14, 2008	ASCE Seminar * Liability of Engineers: How to Stay out of Trouble , Atlanta, Georgia.
November 20-21, 2008	ASCE Seminar * Wind Loads for Buildings & Other Structures, Dallas, Texas.
November 20-21, 2008	ASCE Seminar * Slope Stability Probabilistic Analysis and Instrumentation, Atlanta, Georgia.
November 20-21, 2008	ASCE Seminar * Project Management, San Antonio, Texas.
November 20-21, 2008	ASCE Seminar * Treatment Plant Hydraulics for Civil Engineers, Nashville, Tennessee.
November 20-21, 2008	ASCE Seminar * HEC-HMS Computer Workshop, Nashville, Tennessee.
November 20-21, 2008	ASCE Seminar * Instrumentation and Monitoring Bootcamp: Planning, Execution and Measurement Uncertainty for Structural and Geotechnical Construction Projects, Atlanta, Georgia.
December 4-5, 2008	ASCE Seminar * Design and Strengthening of Shallow Foundations for Conventional and Pre-Engineered Buildings, Atlanta, Georgia.
December 4-5, 2008	ASCE Seminar * Leadership Development for the Engineer, Atlanta, Georgia.
December 11-12, 2008	ASCE Seminar * Introduction to Detention Pond Design for Parking Lots and Urban Drainage, Dallas, Texas.
December 11-12, 2008	ASCE Seminar * Structural Design of Industrial Facilities, New Orleans.
December 18-19, 2008	ASCE Seminar * Design and Renovation of Wood Structures, New Orleans.

*For more information, call ASCE toll free at (800)548-2723 or visit the ASCE website: www.asce.org.
For the schedule and registration for the ASCE web seminar continuing education regularly offered: Visit the ASCE website / continuing education / distance learning / live interactive web seminars.

Highlights of the May Board of Directors meeting

There was significant concern expressed by the Section leadership concerning the recent low attendance experienced during the awards banquet held in conjunction with the Section's Annual Spring Meeting and Conference hosted by the Acadiana Branch in Lafayette. It was noted that there were two important national ASCE leaders and a Louisiana statewide official who were featured speakers during the plenary sessions scheduled during the Conference. They discussed the general theme of higher education and the important transitions that are being planned and anticipated in the civil engineering curriculum and possibly the entire engineering curriculum. It is not uncommon — though unfortunate — that the Section conferences hosted by the Branches do not attract much of a statewide audience but mostly one exclusive to local branch members as was the case in Lafayette.

The plenary sessions that were not embedded in the technical session program such as the concluding Thursday evening awards banquet were very poorly attended relative to the total attendance during the Conference and the expectations of the Section's leadership. This was attributed somewhat to the changing character of the audiences that now attend Section conferences. They are mostly those who are principally seeking professional development hours to sustain their engineering licenses and they are those who more typically appear to have little or no interest in the ASCE or the important professional engineering issues of our times. One "incentive" for this lack of participation may have been the billing structure for the Conference. The fee for the awards banquet was separate form the general conference fee. It was suggested that in the future this fee for the awards banquet be included in the general conference registration fee and also offered to individuals who are not attending the Conference but wish to attend the event.

Since the election of the 2008-2009 Section Board of Directors during the Section Annual Spring Meeting and Conference, the two Director-at-Large positions for which there were no official nominees provided and for which there were no nominees offered from the floor of the meeting and for which no one was elected have since been appointed by the Board of Directors. They are Dax A. Douet, PE, from the Acadiana Branch and Christopher G. Humphreys, PE, from the New Orleans Branch. They will be installed in their respective offices with the remainder of the elected Board of Directors during the Section Annual Meeting to be hosted by the Shreveport Branch during a noon meeting September 19, 2008.

A Baton Rouge Branch representative acknowledged that there was some outstanding business concerning a State Public Affairs Grant (SPAG) that had been granted to the Branch through the Section during the 2005-2006 administrative year. The events following Hurricane Katrina led to a failure by the Baton Rouge Branch to file the required report of the completion of its planned public affairs activities that were funded through the SPAG. There was no reaction by the ASCE national organization to this oversight and failure to report the completed SPAG work. The Branch was advised by the Section to complete and file the report necessary to meet this obligation.

The Section's allotment to each student chapter in response to receiving the chapter's annual report was made to each student chapter that provided its annual report to the Section's Secretary-Treasurer by the deadline that is now passed. There were two delinquent annual reports from the Southern University and the McNeese State University ASCE Student Chapters. A better effort to make reasonably sure that chapter advisory personnel are aware of the allotment and the requirement to obtain it so they can counsel the chapter leaders to appropriately respond.

Attendance to headquarters orientation workshop for Section and Branch leaders was touted by the ASCE headquarters staff. Its goal is to introduce Section and Branch leaders to the assets and opportunities available to them through the ASCE headquarters staff and its resources. It was conjectured that this nationally unfunded activity in Washington, DC, seemed somewhat redundant in content to the annual bi-regional conferences for branch, section and student chapter leaders. Though the Section has not participated in these past workshops, it was decided to make it a policy to send the Section's Secretary-Treasurer to the workshop beginning in October 2008. An amount of $800 was budgeted to cover the a expenses of atteding.

Ryan C. Koenig one of the organizing committee members for the Louisiana Civil Engineering Conference and Show is making the arrangements for a panel discussion during a luncheon plenary session and a separate technical session during the Conference dedicated to discussing the latest developments concerning the Body of Knowledge associated with ASCE Policy 465 - Academic Prerequisites for Licensure and Professional Practice. Tentatively, Kenneth J. Fridley, Department Head and Professor of Civil Engineering at the University of Alabama, Jeffrey Russell, Chair and Professor of the Department of Civil and Environmental Engineering at the University of Wisconsin-Madison, and Kenneth L. McManis, Department Head and Professor of Civil Engineering at the University of Louisiana at Lafayette who are active in this process will be invited to make these interactive presentations.

It is also planned that this same group will be scheduled to attend a series of meetings with key engineering faculty members at the 6 universities in Louisiana with civil engineering curricula. The Section anticipates that it will cover approximately $1200 their undefrayed expenses.

The future plans for continuing the publication of the Section journal are still somewhat tentative. The ad hoc committee tasked to study the options for a future direction for the Section journal recommended that

- steps be taken to reasonably ensure the continued publication and quality of the journal
- the Publication Committee will consist of 4 members including the President-Elect and 3 unspecified directors who would serve as the chair and members respectively
- the part time services of a professional writer be retained to serve as a text and content editor.

President DesOrmeaux informally obtained some data from the Texas Section concerning its costs to have its journal professionally produced. He roughly estimates that it will cost the Section $30,000 a year. Considering current costs and revenues, this does not appear to be a viable option.

In other matters

- It was announced that the Shreveport Branch will host the Section Annual Meeting September 19, 2008 at the University Club in Shreveport around 12:00 noon. It will be a 2-hour event including installation of Section officers and the presentation of awards to outstanding Section members.
- It was noted that in the Highlights of the February Board meeting that appeared in the May 2008 issue of the journal, it was incorrectly observed that the Section President-Elect would have first refusal to attend the legislative *Fly-In*. It is the Section Vice President that has first refusal.
- Region 5 is sponsoring a grant funded workshops in each section of the Region to attempt to revive new grassroots membership participation in ASCE activities. This may be in conjunction with the Louisiana Civil Engineering Conference and Show.
- President DesOrmeaux will update and revise the Section Operating Guide.
- The next Section Board meeting will be devoted exclusively to developing a clear and positive direction for the future of the Section's journal and a review of the Section's revised/proposed Operating Guide.
- The Section Special Activities and Awards Committee Chair advised that the deadline dates for the Section awards program have been revised to better administer the Section awards.

Conference and meeting in Section

Detailed information and access to registration for the conferences and meetings scheduled and discussed here are provided on the home page of the Section website under **Section-wide conference opportunities**.

Section Annual Meeting

Date: September 19, 2008
Time: 11:30 am
Place: University Club in the American Tower in downtown Shreveport
Reservations: rcooper@alliance-ae.com

Ending a long tradition, the 2008 Section Annual Meeting will not be hosted in New Orleans by the New Orleans Branch following the Louisiana Civil Engineering Conference and Show. Instead the Annual Meeting will be hosted by the Shreveport Branch in Shreveport. This Section general membership meeting will be a noon luncheon where the ceremonies will be held to present awards to several outstanding Section members being recognized for their career accomplishments, and their service to their communities and profession. It will also feature the installation of the Boards of Directors for the Section and Shreveport Branch that will serve during the 2008-2009 administrative year.

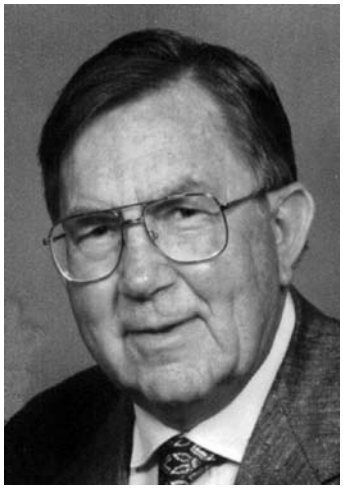
The new members of the Section Board of Directors were elected in April during the 2008 Annual Spring Meeting in Lafayette. Their installation will mark the beginning of the 2008-2009 administrative year for the Section.

Deaths

Leo William Gagnon, Jr., PE

Bill Gagnon who will be remembered as a friend and colleague to so many in the Baton Rouge and New Orleans Branches died June 15, 2008. He was 66 years old. A long time resident of Baton Rouge and an associate with the engineering firm Professional Engineering Consultants Corporation located in Baton Rouge Bill was an active member of the Baton Rouge Branch serving in its volunteer and elected leadership rising to its presidency during the 1984-1985 administrative year. A native of New Orleans Bill was a resident of Metairie at the time of his death. He is survived by his wife of 41 years Nancy and their two children Darren and Mary. Bill earned his BS degree in civil engineering from Louisiana Tech University and he held licenses in civil and environmental engineering in Louisiana. Bill served his country in the U.S. Air Force in Thailand during the Vietnam War and he was active in his community. He is a past member of Bacchus and the Krew de Mystique and a past master of St. James Masonic Lodge 47 in Baton Rouge. Bill was a member of the Masonic Louisiana Lodge 102 in River Ridge and belonged to the York Scottish Rite and the National Scottish Rite.

Henry Karl Schott, PE



Henry Schott a member of the ASCE since 1943 and a long-time resident and member of the Baton Rouge Branch died October 5, 2007. He was also a member of the Louisiana Engineering Society. Born Heinrich Karl Schott October 19, 1919 in Harleshausen (now Kassel), Germany he immigrated with his parents to the United States in 1927. Henry and his family settled in Elizabeth, New Jersey and he earned his civil engineering degree from the Newark College of Engineering (now the New Jersey Institute of Technology) in near-by Newark. In 1943, Henry and his wife Elsie Fraatz Schott were married and he was employed by the engineering firm Parsons, Brinkerhoff, Quade and Douglas in New York City. In 1959 his firm transferred him to it offices in Baton Rouge where Henry split his employment tenure between the private sector and the Baton Rouge City-Parish Department of Public Works. Once Henry rejoined the Department as its subdivision engineer, he remained until his retirement in 1984 as its chief engineer. Henry is survived by his wife, Elsie, their 3 children, 5 grandchildren and 7 great grandchildren. He was a member of St. Paul Lutheran Church in Baton Rouge for 48 years where he served in several leadership roles.

Louisiana Civil Engineering Conference and Show

Registration is now open for the 2008 Annual Louisiana Civil Engineering Conference and Show in Kenner that is scheduled for September 24-25, 2008. Registration and information is available on a new Conference website and it may be accessed through the announcement on the Section website. Sponsored by the New Orleans Branch and the Louisiana Chapter of the American Concrete Institute, the Conference may be the best opportunity in the Section for civil engineers to attend a local conference offering two full days of three concurrent, high quality technical/professional sessions and the opportunity to acquire up to 11 professional development units over the two-day period. As the speaker commitments for the technical sessions of the Conference are being filled out, the planning status and the access to opportunities to participate as a vendor, sponsor or speaker are also available on the New Orleans Branch website.

Your invitation: PE/CE exam review

The Section and its branches are cooperating to make the very popular ASCE live PE Exam Review Course that is offered on the web available at a site in each of the branch areas and open to all of the Engineer Interns in Louisiana who are preparing to take the civil engineering discipline component in the near future. This course is intended to help the Engineering Intern prepare to pass the PE Exam. It is taught by a team of experienced PE Exam Review instructors who will present it in a series of 12 2-hour modules over a 6-week period.

The participating organization pays a single site registration fee of approximately $2000 and an unlimited number of people in the organization can be admitted to attend the course at the site. By this means, the course can be offered at a very reasonable cost to each participant. Potential participants are invited to register for the course by contacting a member of the branch leadership in their respective branch area. Currently, it is anticipated that the once-a-week sessions are expected to begin in September and be offered on Thursdays at 3:00 pm.

To facilitate attendance, the Section leadership requested the Louisiana Professional Engineering and Land Surveying Board staff to provide it with the list of Engineer Interns scheduled to take the civil engineering discipline component of the next PE Exam scheduled for October 24, 2008. The list of candidates approved to take the civil engineering component was provided by LAPELS Board Executive Director, Donna D. Sentell. The individual branch leadership will be responsible to see that these individuals in their branch be contacted and advised of this opportunity.

Context sensitive outreach

By Deborah Keller, PE

I recently heard about a well-intentioned, international construction company that participated in a community outreach program for children at the New Orleans Children's Museum. From this experience, and as a civil engineer, a parent, and a Hurricane Katrina survivor, I would like to caution the engineering community with regard to the need for sensitivity in considering the poignant aspects of a disaster, especially from the human experience side.

The demonstration at the Children's Museum was intended to teach children about levees. It appears to be a very creative, hands-on activity in which the children built model levees out of clay inside a clear, plastic tub where there was a model of a town to be protected. The children then filled the flood side of their levees with water to see if they could hold back the rising water. Needless to say, most of the children's levees failed and the model towns were flooded.

For the children who did not lose their homes, pets, friends, relatives, or possessions, I am sure it was fun to see flood water course through the model town. However, for those who did experience the devastation and still may be suffering from the mental trauma of the event, this would not appear to be appropriate. Such an outreach activity clearly needs careful consideration in many parts of southeast Louisiana, especially in St. Bernard Parish, New Orleans East, and the Lower Ninth Ward, where families waited to be rescued from rooftops days after flood.

Many children who were at an impressionable age in 2005 are still in post traumatic therapy. A demonstration of a model levee subject to failure and resulting in water graphically pouring into the streets and houses of a model town could evoke unpleasant memories and unwelcome emotions. It may be similar to having children who lost homes, pets and possessions in a California wildfire learn about fire prevention by watching a model house burn.

Many disaster survivors have deep seated anxieties for years after the event. I have spoken with those who have experienced disasters in other parts of the country and mental health professionals working for FEMA. Post disaster stress recovery is a disaster recovery issue that is as real as repairing the infrastructure.

Outreach activities are very important and worthy of our support. However, I strongly urge that planners and sponsors reasonably assure their success as a positive learning experience for their participants. They should carefully consider the appropriateness of their activity for the intended audience and refine this assessment by consulting with the teachers, museum directors, and community leaders well in advance.

As engineers, we must appreciate the toll a disaster takes on the human spirit and be sure that our outreach efforts to educate victims in the aftermath of a disaster are sensitive to the needs of this audience. We are trained to focus on the principles of engineering design, the laws of physics, and the forces of nature. It is commendable when we as individuals or through our organizations/businesses, reach out to our communities to educate them about our profession. In this non-traditional role for an engineer, we must be sensitive to the human condition to reasonably ensure that our means to educate are sensitive the audience and thereby effective in obtaining our intended consequences and avoiding unintended ones.

Membership: Promoting involvement

Though too sporadic for a firm conclusion, experience and empirical evidence seems to confirm that the positive attitudes and actions of the established senior leaders in our professional communities — employers and engineering organization leaders — significantly affect the attitudes and actions of their followers — junior constituents. While membership dues subsidy encourages membership, enthusiastic participation founded in personal initiative is encouraged principally by a fire in the belly that is ignited by senior leaders who *lead* by setting the example, acknowledging its importance and encouraging their juniors. This may give some validity to a recent suggestion to consider retreading Life Members into the Section leadership.

The June 2008 *Section Informant*, the online e-newsletter to section leaders, featured a news article about a Region 5 grant activity as an example of one funded by the ASCE Board of Direction for tasks that support the strategies identified in its strategic plan. The activity is to develop effective means to increase the participation in — and the support of — the ASCE by the senior leaders in civil engineering organizations assuming that their attitudes and actions are the problem.

Our Region 5 Board of Governors is planning two plenary forums and professionally facilitated workshops in the region to focus on estimating the lack of support of the ASCE by key leaders in the profession by focusing on those employed in the government, industry, and consulting communities. Individuals in these sectors will be invited to participate in defining the issues and attitudes that support management philosophy concerning professional activities. The main objective is to identify the impediments to ASCE membership and more importantly involvement caused by the issues and attitudes identified , and how they may be ameliorated.

Also planned is a forum to explore the role of the ASCE in continuing professional development and the support of other licensure requirements. Select individuals will be surveyed and the information gleaned will presented and discussed as part of the forum. It is believed by the proponents of the planned forum that the information gathered and its potential strategic impact can alter in a positive way the attitudes of the leadership in civil engineering organizations toward the role of the ASCE in professional development.

For example, in the close-knit network of transportation officials in Region 5, there are many that support membership and participation in professional societies while some do not. The proponents hope to promote greater appreciation and support in this group related to the benefits of membership and involvement in the ASCE. Similar networks in the industrial and consulting communities will be targeted in an attempt to produce a similar result. The use of information from surveys conducted in advance and invited speakers will be used to facilitate open discussion and interaction during two forums planned to be held in conjunction with strategically selected and centrally located section sponsored activities. One of these forums will be an opportunity for Louisiana Section members. It will be held in conjunction with the Louisiana Civil Engineering Conference and Show scheduled to be held in Kenner September 24-25, 2008.

This effort focuses on long held concerns regarding impediments to membership and participation in professional societies like the ASCE. It is hoped that the planned effort will effectively resolve some of the issues. It is essential if the ASCE is to reach the long anticipated and not achieved *next level* of membership growth and participation. Ultimately, a result of the plenary session forum followed by the workshop sessions planned will be a report outlining the issues and attitudes revealed from participant surveys. It will attempt to measure any shift in attitudes of the participants toward membership and participation in professional societies like the ASCE.

❖ Quotes ❖

Environment: *From the dawn of civilization up to present, engineers have been busily engaged in ruining this fair earth and taking all the romance out of it.*

- Conde B. McCullough (1887 - 1946)
  Oregon Bridge Engineer
  http://www.asce.org/history/bio_mccullough.html

Ethics: *The more I learn about "ethics" programs and "ethics" experts," the more I think ethics has become a pious word for imposing the arbitrary notions of third parties on others, who are forced to pay the price for whatever has caught the fancy of self-congratulatory elites.*

- Thomas Sowell
  Columnist

Editor's Journal

By James C. Porter, PE

Justification for Louisiana Section

As someone who obviously believes in the need for the Louisiana Section by the civil engineering community in Louisiana, I have been challenged on 2 occasions to go toe-to-toe with a member in a *point-counterpoint* article in *The Louisiana Civil Engineer* to rebut the thesis — there is no need for the Louisiana Section. There have been similar sentiments openly expressed in the past by the New Orleans Branch leadership that were shared with the Section Board of Directors. This included a serious discussion in the Branch about secession from the Louisiana Section and the formation of a New Orleans Section.

A particularly memorable proposition to disband the Section was made by an incumbent Baton Rouge Branch president as a motion during a Section Annual Spring membership meeting. As I remember it, the motion failed on a technicality. It is poignant to me that these propositions came from Section members with a history of knowledgeable and attentive leadership and service in the Section. I cannot dismiss their propositions as crank notions.

Neither point-counterpoint article came to pass but in anticipation of answering the first one, I began to develop my thesis in support of the need for the Section. I found that I was not in want for what I consider substantive justification based on what I consider are inherent needs that the Section should serve. However, it is troubling how vulnerable my defense is when the actual performance of the Section in stewardship and leadership in service to its members is compared with the several needs I visualize.

I conclude that there is no lack of *potential* but there is a serious lack of *performance* consistent with the potential. This can lead to a reasonable conclusion that the Section may not be needed if its ongoing poor performance continues. The Section's existence cannot be justified by the non sequitur that *it was created for a reason — therefore there must forever be a reason for it to exist*. The justification for the Section to exist, I believe, is founded equally in *both* the existence of *real* needs and the *actual* services to address them.

I believe a review of the Section's recent history demonstrates that when important issues affecting the interest of its members come to the fore, Section leaders deliver effective leadership that is well connected to member concerns. The most recent issues addressed by the Section's leadership concern national ASCE politics. They are the change in national ASCE governance, the proposed academic prerequisites for licensure and professional practice embodied in the ASCE policy statement 465 and the proposed establishment of an ASCE 501c(6) organization to form a PAC and expand the ASCE's political activity and funding.

After effectively opposing the changes in the national ASCE governance that significantly diminishes the influence of the sections, the Section's leadership has actively participated in the implementation of — and is working in — the new structure it opposed now that it is the will of the majority. Work supporting ASCE Policy 465 concerning educational requirements for civil engineers — a long term effort — has shifted favorably due to the efforts of the Section's leadership in concert with other entities in the ASCE. The proposed ASCE 501c(6) organization opposed by the Section's leadership failed in the first attempt but it is an active, hot button issue expected to be revisited. It is strongly supported by the national ASCE elected and staff leadership where the bulk of the political power in the new ASCE governance has shifted.

Where then is the *vulnerability*? When external issues are imposed, there is no immobilizing inertia of rest or lack of energy in the ability of the Section leadership to respond. The problem is when the Section's leadership has no urgent external issue to address it appears lethargic and unable to manage its important routine business. It is either incapable of — or simply not disposed to — taking initiatives to identify and pursue routine business. Stated another way, the nature of the Section's leadership appears to be *reactive* — not *proactive*.

The Section's leadership appears to be overwhelmed by the simplest of its housekeeping tasks that I believe are important to its organizational vitality and effective operation. Examples of these mundane tasks are

- establishing a strategic plan regularly visiting vision, mission and goals statements
- establishing programs and setting priorities
- managing programs and operations
- appointing committees to pursue programs
- recruiting and serving section members and
- maintaining a section operating guide

Typically, these tasks either go undone or are done poorly. This appears to be a lack of what Elvis Presley called TCB (taking care of business).

When an important need is identified such as a Section website, it can take months if not years to implement when only a few hours are needed. Leadership initiatives like *two* recent efforts to develop a strategic plan were ignored by the Board and again by a special committee formed to consider it. It took the Board over 20 years to consider developing — not actually develop — an infrastructure report card for — and a service to — Louisiana. This came only after the great value of the report card was clearly demonstrated in several sections with the leadership to get it done. This *effort* now seems to have been abandoned before it got started.

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Mixing law and technology

One of the criticisms by the National Academy of Engineering of the executive summary of the study of the New Orleans levee system by the Interagency Performance Evaluation Task Force questions the appropriateness of the statement that, "There was no evidence of government or contractor negligence or malfeasance." This inappropriately addresses a legal issue in a technical report that should by its intent exclusively address technical issues. This statement may be a defense for the inappropriate accusations in the technical reports from the preliminary investigations that overtly assigned culpability for the levee failures.

If culpability were truly an important part of a technical report, it would have its own place in the report and a team of imminently qualified attorneys and private investigators who would be retained as a part of the investigative team to provide a legally authoritative lowdown on who is at fault so the guilty can be pilloried by *their* "peer professionals" — not *mine*.

I believe that this is a symptom of a false sense of superiority a very few in our profession find in vicariously assigning fault and assessing blame. The biblical gospel about the one who would "cast the first stone" is apparently wasted on them. They would appear to be much less interested in improving the practice of engineering by gleaning and sharing the valuable lessons to be learned from the unfortunate errors of others than in standing in judgement. Following an engineering failure, it would appear that the engineer(s)-of-record will stand out like a sore thumb without any extracurricular activity in the technical evaluation.

It is easy enough to understand the economic motives driving some in our engineering community to badmouth other engineers in public but mostly behind the scenes in a campaign to supplant them. We know they don't mean it when they readily hire the same engineers they have previously badmouthed. But I cannot see any other rational motive here other than vanity and poor character run amok.

If we as a profession allow ourselves to be profoundly affected by petty and contemptuous blame games, we do ourselves a serious disservice. I believe that this injustice can cast a pall on innovation, and on the trusting relationships we need with our clients and each other. One would think that there is enough regulation, liability in practice, public scrutiny, low tolerance for engineering failures and professional societies struggling with writing and enforcing codes of ethics to provide a background and an incentive for engineers to practice in a responsible and conservative manner.

I think that openly practicing law without a license, making unsolicited/unsupported accusations concerning the culpability of other engineers, or clouding technical issues with unsupported amnesty statements in a technical report is in fact a disservice to the profession if not an ethical problem in itself. It would appear that for any of this behavior to go unchallenged in such a high profile failure investigation would either set or reinforce terrible examples. "Let it stop with us."

Engineering societies struggle on with the perceived poor public image of engineers even after an ineffective combined public relations campaign by several engineering societies expending $400 million between them seeking an improvement. This is according to Eva Kaplan-Leiserson in her article "Consistently Mediocre?" published in *PE 7/07*. She notes in the following litany of concerns that...

- engineers have receded into obscurity as have the visibility and more obvious impact their works in recent years.
- technology went from being a mysterious and highly valued endeavor to an ordinary negatively viewed practice as the unintended consequences of technology have been publicized widely.
- engineers suffer from being perceived as mediocre.
- engineering is perceived — espoused by engineers — as hard, grunt work requiring math and science skills to solve complex problems and build things.
- the innate creativity in engineering and its positive effect on people's lives is taken for granted and gets little notice.
- the engineering profession lacks charismatic role models.
- engineering loses potential value because minorities and women are under represented.
- roles of engineers are not portrayed enough in movie and television entertainment.

Missing in action

I believe that the perception of mediocrity does not stem from simply a lack of public understanding or some confusion about what engineers do and it cannot be corrected with a public notice or an ad campaign. It is the actual knowledge of what engineers actually do or do not do in public and in the workplace that sometimes screams of self-obsessed mediocrity — "the negative view of engineers' engagement with societal and community concerns." Talk is cheap. *Action* speaks infinitely louder than the carefully packaged slick words of a public relations campaign.

Has it escaped our notice that the engineering of public works is practiced — and preferred to be practiced — mostly in obscurity and inasmuch as it is possible away from public view? I believe that the current public perception of engineers is a direct consequence of this. I do not agree with the statement made by a professor of mine that "... Once you decide what you are going to build and where you are going to build it, the engineering is done." However, I do agree that at the stage of applying the technology this important part of the engineering must have been practiced openly with public participation.

The engineering work which remains to be done — the grunt work — has been substantially reduced by the technology application software so ubiquitously available today. But it does not eliminate the need for its intelligent application by a knowledgeable technologist. The impact of engineering on people's lives is unknown to the public because engineers do not participate effectively in the public forum regarding the very important first part of the engineering. For the engineering to be successful, an effective interaction between the engineers and the public is required. Engineers must actively participate in the debate and facilitate effective public decisions concerning engineered public works. The lack of engineer/public interaction and public participation in general can result not only in poor engineering because of poor initial choices but in a higher

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Historically, there are several standing committees that have been designated by various Section Boards. The Section Operating Guide identifies only four standing committees that currently function. They are the

- Nominating Committee
- Publications Committee
- Student Awards and Activities Committee and
- Special Activities and Awards Committee.

They provide a slate of candidates for vacancies on the Board, communicate with Section members, and recognize outstanding students and members. By observation, these committees apparently serve the only functions in the Section that are apparently perceived as important enough to perpetuate the Section.

There are eight other standing committees identified whose operations have been mostly defunct though ineffectual chairs who are appointed from time to time. They are the

- Legislative Committee
- Public Relations Committee
- Younger Member Committee
- History and Heritage Committee
- Membership Committee
- Engineering Management Committee
- Council of Department Chairs and
- Continuing Education Committee.

These committees were originally identified as part of the vital business of the Section and the name generally suggest their program area or functional intent.

Membership. This is the single most important and urgent committee function concerning the Section's health and vitality. It is responsible for direct contacts to recruit and retain members. Member retention involves identifying, recommending and implementing strategies possibly through other Section programs that will add value to the members' professional development. For example, the purpose of the *Younger Member Committee* is particularly to add value to the younger members professional development.

Public Relations. This committee is typically responsible for direct contacts with Section members, the news media, the public, etc. to promote the ASCE and develop an understanding of civil engineering issues in response to events such as the I-35 West bridge collapse in Minnesota or the ASCE infrastructure report card as they may relate to Louisiana.

The Board is responsible for defining, initiating and managing the Section's programs. Experience clearly demonstrates that indiscriminately appointing committee chairs alone is not enough. There must be obligations defined, understood and exchanged in terms of goals/objectives, expectations and accountability for each program jointly identified by the committee leadership and the Board. This implies that the Board must be continually in active, responsible charge of the Section's programs in concert *with* its appointed committee leaders.

Several years ago, the 8-member Section Board was enlarged by 4 directors-at-large ostensibly to move the appointed standing committee leadership into the elected leadership to improve their effectiveness. More recently, the Board was enlarged again to its current 14 members to balance branch representation. During this time, Section Boards typically appointed committee chairs without jointly identifying goals/programs, and expectations/accountability. The standing committee chairs appointed have typically respond in kind by doing nothing. The standing committees were not staffed by the Directors-at-Large as originally planned leaving them without defined responsibilities. Consequently, these directors with no duties often do not attend Board meetings.

Until the 2006-2007 administrative year when no committee chairs were appointed to the 8 historically inactive standing committees, on average there were less than 2 committee reports a Board meeting and none from these standing committees. This is consistent with no vision, no mission, no goals, no programs, no priorities or simply no strategic planning; and no program management. Together this adds up to very little or no proactive leadership and consequently little of the potential value provided to Section members. All of the heavy lifting — if any — is left to the initiative branches. If the Section and its branches developed a common strategic plan, the Section would have the foundation to develop and effectively manage programs and priorities through committee obligations and their anticipated services.

Since the Section Board engages in practically no routine proactive leadership, it inspires inattention among appointed and elected leaders because there are no defined, acknowledged and accepted responsibilities, and performance expectations. On this basis, the original 8-member Section Board appears much larger than required to manage the Section's current level of operation. However, the 14-member Board appears consistent with the resources required and available for the level of service originally envisioned and believed appropriate to effectively serve the needs of the Section's members. The ultimate question then becomes a loaded one. Since the Section's leadership necessarily rises from its rank-and-file members, does the Section's reactive leadership now accurately reflect the actual needs and expectations of it's members or is it just a bad habit? If it does accurately reflect member expectations, is there justification for a Louisiana Section? If so. In what form?

Evolution or revolution

An article in *Structural Engineering 8/07* discusses the evolution of computer software in the structural analysis/design processes for conventional commercial buildings. The chronology begins in the 1960s when I began my career in engineering. Yes, I am one of those who completed my undergraduate studies with the exclusive services of my trusty slide rule, log and trigonometric tables, and the rare use of someone else's rotary calculator.

The chronology begins with the basic manual design process with computer software beginning to creep into the process in the 1970s for the more complex buildings first as a mainframe analytical tool to refine and verify the final design analysis. This use evolved with the analytical/design software migrating to the increasingly more powerful personal computer in the 1990s that is now being used for most conventional buildings and it is in the process of being integrated with building information modeling (BIM) software and other software that may lead to the automation of engineering drawings and reports.

The skill sets are clearly different for the manual versus the computer-aided design process. For conventional buildings once routinely a manual design application, computer-aided design has become a competitive necessity in the structural design services marketplace. This is because the software allows substantial productivity gains over manual design and it accommodates rapid and inexpensive reevaluation at any stage.

The structural engineer's skill set for manual design requires a deep theoretical understanding and practiced familiarity with the design specifications and formulas applied to buildings and their components gained through their regular use. Intimate contact with the actual design/analysis processes provides the engineer a strong intuitive sense and anticipation of the results obtained. It is almost — if not indeed — an independent check in itself.

The structural engineer's skill set for computer-aided design has evolved from reviewing monochrome, abstract tabulations later enhanced by graphic printouts of framing plans to manipulating sophisticated interactive graphics to develop models and visually display the results of the complex design/analysis in graphic form. It appears that this skill set may be becoming comparable to those needed for playing with an *engineering Nintendo® game*. The deep theoretical understanding and practiced familiarity with the design specification parameters and the intuitive sense of the structural analysis — if it exists at all — may be somewhere out there in cyberspace along with the understanding of the more abstract specifications and formulas as interpreted by the software developers.

The experience of the software user-engineers may exist only at the input/output interface where they become *superficially* familiar with particular design/analysis software and the specific applications they repetitively use. They will continuously beta test the software for plausibility and expected results in the name of *proper and responsible use* of the proprietary design/analysis software. When it is available, they may also rely on high quality software documentation that is now becoming the subject of a developing and important industry standard and certification.

The question begs, "Is the judgement and experience that will be gained in a career of superficially manipulating interactive, computer-aided design software be sufficient to actually ferret out errors and deficiencies?" The reality may be that "...designers ...rely on the software doing what it claims to do without error..." and "...verification of software is limited to validation of results on a project-by-project basis..." or beta testing for consistency and overt errors.

A concern I have is that the earlier, simplified and more conservative design specifications and formulas have become more complex. This is justified by a perceived need to more accurately estimate actual and important material and structural behavior. A problem with the more accurate design results is that it is founded in additional formula complexity. The recent complexity in the design formulas and methods seem to me slanted toward computer application in the design processes that can easily handle it in the background beyond — and in defiance of — the user-engineers' purview and intuitive understanding of a hidden process.

My trusty slide rule and its predecessor instruments survived as a viable computing instrument in pursuing the work of engineering technology for nearly 350 years — nearly 10 generations of working engineers. It was supplanted along with the more precise log and trigonometric tables in less than 5 years by the electronic *scientific* pocket calculator. Using the pocket calculator to manually apply engineering technology to conventional buildings from conception to final plans may be effectively supplanted by ubiquitous proprietary software now available on — and being rapidly developed for — the personal computer in a mere 30 years — not the length of one engineer's career. This is not evolutionary, it is revolutionary.

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probability of unintended, negative consequences — "partly a bed that the engineering community has made for themselves."

Surely the scattered and sometimes unflattering public relations message portrayed by engineers based on their values and what they do may not help much in explaining what engineering is or should be. The engineering of public works is often not — but should be — a visible public practice where the technological grunt work also an important component supports the public practice and benefits from it. I believe that engineers have by default left the public practice of engineering in the ineffective hands of political hacks simply because they fail to accept this opportunity/responsibility or act effectively when performing it. act effectively when performing it.

The public practice of engineering — particularly for public works — in a democratic society is a *leadership* role that is more and more being left to non-engineer secretaries of departments of transportation, administrators and directors of public works, etc. Effective leadership in a democratic society helps its citizens understand and define where they want to go and then facilitates them getting there. In the public works engineering role, the best people — engineers — are missing in action. By default, they typically leave it to political appointees other than engineers to provide less than effective leadership for the public and engineers alike. Then the engineers get to work with frustrating, less-than-creative decisions and take credit for *acting* and *being* mediocre.

For years, I have sensed among fellow engineers who appear primarily dedicated to the technological grunt work a certain resentment concerning public input and direction that suppresses the opportunities for more elegant and creative solutions in their work. This is after they or another real engineer representative fails to effectively participate in the public forum to define the engineering work.

The goal of many engineers appears to be to escape from a mandated public hearing with their preferred solution in tact. This can be accomplished by not effectively communicating with the public to arrive at what may be a different more elegant solution that better addresses the expressed needs of the public. This preferred solution sometimes thought of as the "best technical solution" is often a strong starting point to arrive at the best engineering solution via effective public input facilitated by the engineer.

This interesting statement appears in the same issue of *PE* in an article concerning non-engineers that lead the public practice of the engineering work: "...in the event of an emergency, a PE can speak to the public both from a public relations and an engineering perspective..." Public works are just that — public — and whether it is an emergency or not, the role of the engineer in public works requires public participation and leadership to actually provide the public what it wants and needs. If engineers are not *routinely* practicing in public to facilitate creative solutions for public works projects, I cannot visualize engineers as ever being perceived as any more than mediocre even if they do the most difficult grunt work using the best and most advanced technologies available. Engineering is not just a matter of getting there in style technologically but effectively ascertaining in the public forum where *there* is in the first place.

❖ Quote ❖

Excellence is the results of caring more than others think wise, risking more than others think safe, dreaming more than others think practical and expecting more than others think possible.

- Anonymous

How sweet it is

Columnist Rich Lowry in his essay titled "Thanks go to miracle of plenty" that appeared in the *Advocate 11/20/07* leading up to Thanksgiving Day observes

> Something that won't be high on anyone's list of things to be grateful for, but undergirds our way of life: a centuries-old economic revolution that changed the very terms of human existence.

He references *A Farewell to Alms: A Brief Economic History of the World* by Gregory Clark to provide some eye-popping observations.

> ...income per person... is essentially flat from 1000 BC until AD 1800, reflecting the crushing burden of providing for our material wants... Income per person explodes upward around 1800, coinciding with the Industrial Revolution... "The average person in the world of 1800 was no better off than the average person of 100,000 BC... Life expectancy was no higher in 1800 than for hunter-gathers: 30 to 35 years..." ...Through most of history... economic advances were outpaced by resulting population growth that made it impossible for living standards to increase.
>
> The massive productivity gains of the Industrial Revolution — driven essentially by expanding knowledge — broke the trap and created modern life as we know it. "The richest modern economies are now 10 to 20 times wealthier than the 1800 average ...(I)t is the unskilled who have benefitted the most... and this results holds for all advanced economies."

Lowry further references *God and Gold: Britain and America, and Making of the Modern World* by Walter Russell Mead for the geopolitical perspective. Mead notes that

> England embarked on its capitalist revolution (and) "...would gather rewards that far outstripped all of the treasures of any empire in the past." ...The formulas for... success have been... "An open, dynamic and capitalist society (that) generated innovations in finance, technology, marketing and communications... (and offered) enormous advantages in world trade. The wealth gained... provided the basis for military power that could withstand... dictatorial challenges... from Napoleon's France to Hitler's Germany to Stalin's Russia.
>
> ..."Currently , industrial societies appear to be doubling their rate of technological progress every 10 years... If this continues... the 21st century will experience the equivalent of 20,000 years of 'normal' human progress." ...(T)he United States is positioned to stay at the heart of this progress.

For us engineers who sense we are so uniquely unappreciated and yet so deserving as a profession, I believe that there are three significant observations that can be drawn from Lowry's essay and his references that should bring us all a little closer to reality.

- The human condition to which engineers significantly contribute is taken for granted even though the historical impact is astoundingly significant.
- The contribution of engineers (technology) does not stand alone but goes hand-in-hand with advances in regulation, finance, marketing and communications.
- The contribution of engineers and the advancement of technology does not happen without the evolution of society during the Industrial Revolution that includes the birth of middle-class values, decline in interpersonal violence and the rise of literacy and numeracy.

It would appear that in a society such as ours mostly concerned with instant gratification and the notion expressed by "what have you done for me lately," the history of the advancement of the human condition over the past 200 years does not register though it was preceded by 100,000 years of economic and social stagnation. Sustaining or improving on the current rate of technological advancement — doubling every 10 years — is now simply expected and it will go unnoticed if it happens. For those of us who will futilely seek special recognition of the engineering profession in this environment — good luck!

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cal units. Hence, the resistance factors published in the bridge specifications tend to be conservative. Another shortcoming of these resistance factors is that they were developed for the few analytical methods that were calibrated. There are many analytical methods that are used by state transportation agencies have not been calibrated. For example, there are 2 cone penetration test (CPT) pile analysis methods (LCPC, and DeRuiter and Beringen) used by the DOTD that are not included in the bridge specifications.

In addition to the calculated static load resistance factor, AASHTO also provides static load test and dynamic load test resistance factors. The selection of static load test factors was based on traditional practice with minor adjustment to take site variability and the number of tests into consideration. A minimum number of dynamic load tests are specified in the bridge specifications. Tables 3a and 3b provide the static and dynamic load test resistance factors where Site COV is the coefficient of variation for the probability distribution function of the soil properties on the site.

ASD and LRFD comparison

The safety factors for driven piles used by the DOTD range from 2.0 for static load test to 4.5 for the modified Gates formulae. These safety factors have been used for several decades without significant problems. It is interesting to compare the resistance factors provided by AASHTO to the traditional ASD safety factors.

The equivalent safety factors for the AASHTO resistance factors are shown in Table 4. The equivalent safety factors for static calculations are substantially greater than those used for the traditional ASD practice. Comparing safety factors, one would conclude that the LRFD is much more conservative than the ASD method. This is the result of the database that was used in the calibration making it clear that local calibration is needed. From the comparison, the safety factors in the bridge specifications strongly favor field testing over the static calculations. This will force a majority of the projects to have dynamic load testing at a minimum and static load test for the larger projects.

DOTD LRFD calibration

The DOTD in conjunction with Louisiana Transportation Research Center (LTRC) began the calibration effort for geotechnical applications in July 2006 and the driven pile calibration is now completed. The planned future calibration effort includes drilled shaft and possibly retaining wall design. Murad Abu-Farsakh, PE, of LTRC is the principal investigator and he is leading the calibration work. Also participating in this calibration work are Sean Yoon with LTRC and the author who serve as the co-principal investigators.

The calibration of the drilled shaft design is in progress. Due to a very small database of completed load tests in Louisiana, the Mississippi Department of Transportation has graciously provided their load test database. The DOTD is currently going through the database compiled and categorizing the data. It is antici-

Design Method		Resistance Factor, φ	
		DOTD	AASHTO
Static Method	α-Tomlinson method and Nordlund method	0.55	0.35 - 0.45
Direct CPT method	Schmertmann	0.45	0.5
	LCPC/LCP	0.55	NA
	De Ruiter and Beringen	0.65	NA
Dynamic measurement	CAPWAP (EOD)	1.30	NA
	CAPWAP (14 days BOR)	0.55	0.65

EOD is the resistance measured at the end of driving and BOR is the resistance measured at the beginning of restrike after 14-day after initial driving.

Table 6. Resistance factor (φ) for driven piles. (β_T = 2.33)

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pated that this calibration will be completed in the summer of 2009.

Driven piles

The pile load test database used for the calibration was established by conducting an extensive search in the DOTD project library. Only the precast prestressed concrete (PPC) piles that have been tested to failure and have adequate soil information were included in the study resulting in a total of 42 PPC pile load tests meeting this criteria. In addition to the load test results for the PPC pile load tests selected, all other relevant information available including

- soil borings
- pile driving logs
- dynamic testing and analysis and
- CPT data

were collected. It is important to note that more than 90 percent of the PPC pile load tests selected are from south Louisiana where the soil is weaker than that from north Louisiana. The majority of the soil profiles in the database consist of clays though approximately 25 percent of them are in mixed soils of sand and clay. A summary of the database used for the calibration is shown in Table 5.

Statistical analyses were used to evaluate the different pile analysis methods that include

- the static method (α-method and Nordlund method)
- three different direct CPT methods: Schmertmann (1978) method De Ruiter and Beringen (1979) method and Bustamante and Gianeselli (LCPC) (1982) method, and
- dynamic measurement with signal matching analysis Case Pile Wave Analysis Program (CAPWAP) method.

In addition, reliability analyses based on various reliability analysis methods were conducted to calibrate the resistance factors (φ) for each design method. The results of the calibration using the first order second moment (FOSM) method are published in TRB (Yoon, Abu-Farsahk, Tsai, and Zhang 2008) and they are presented in Table 6.

The resistance factors from the calibration using FOSM is about 10% lower than those from the calibrations with the more sophisticated methods such as the first order reliability method or Monte Carlo method. Due to the limited soil types represented in the collected pile load tests, the database contains only a few piles driven into sandy soils. Unlike the AASHTO factors that are separated for sands and clays, the DOTD's resistance factor for the static method combine both soil types.

Due to the limited data available for the stiffer soils, care should be exercised if applying these resistance factors to the stiffer soils typically found in north Louisiana. This deficiency will necessitate more load tests on the stiffer soils in the future to provide an adequate database to facilitate an adequate calibration. Therefore, at least for the next few years, more load tests will be included in the larger projects located in the stiffer soils of north Louisiana.

Comparing the resistance factor for the static method, the DOTD calibration resulted in resistance factors approximately 25 percent to 60 percent greater than the resistance factors from the AASHTO calibration. The equivalent safety factor for the static method is about 2.6 — a value that is similar to the safety factors used in ASD practice that are between 2.5 and 3.0. This comparison should provide the geotechnical engineer a level of comfort in adopting the AASHTO LRFD method while it also allows the application of a risk level based on the importance of the project. The calibrated dynamic resistance factor is much lower than provided for by the AASHTO calibration. This is probably due to the dynamic analysis being less effective in the mostly clayey soils. The same is true for Schmertmann's CPT pile capacity method. When applied to the weaker south Louisiana soils, it appears that the DeRuiter and Beringen method has a strong advantage over the more commonly used Schmertmann's method.

Implementation

The transition from the ASD method to the LRFD method will require changes in all facets of the geotechnical engineering practice that include

- exploration
- testing
- design and
- construction.

This is due to the concept of risk control, the desire to obtain better data, and the philosophical change to emphasizing increased verification testing in the construction stage and evaluation at project completion. The ASD practice emphasizes complete evaluation in the design stage. Compared to the traditional DOTD ASD field exploration practices, the AASHTO LRFD method will increase the effort slightly. Prior to LRFD, the unconfined compressive strength test was the primary testing method to determine the strength of clay soils. The AASHTO LRFD method requires triaxial tests — either the unconsolidated undrained triaxial test or the consolidated undrained triaxial tests — to determine the shear strength. Also, more careful data analysis is required to analyze site variability and more quality control testing will be needed.

As a result of these changes, DOTD is embarking on a major effort to write a geotechnical design manual and rewrite the Louisiana Standard Specifications. A draft of the geotechnical design manual is near completion and modifications to Section 804 (Driven Piles) of the Standard Specifications has been completed and it is going through a review and approval process. These changes are primarily the inclusion of the resistance factors for the static and dynamic load tests and a shift in the responsibility for data interpretation from the field project engineer to the geotechnical design engineer.

Other issues

As stated previously, the bridge specifications require a greater number of soil borings and CPT soundings and the use of triaxial strength tests rather than uniaxial unconfined compressive strength test. The intent of these requirements is to improve the quality of the data collected and thereby improve the reliability of the capacity prediction that would otherwise be provided by the previous methods. This change will lengthen the project duration to allow for geotechnical study and thereby impact project schedules and costs. Typically, triaxial tests cost twice that of uniaxial tests. The additional soil borings or CPT soundings, and testing requirement increase the project cost for the geotchnical study by at least 50 percent depending on the project size and structure types. The demand on the resources will not be limited to exploration and laboratory testing but also extended to the engineering evaluations required. In addition to evaluating static soil properties, the site variability study will become a standard practice as part of the LRFD method. This will require more time for the design of foundation systems.

Training. The engineers in DOTD have taken at least one National Highway Institute training class on the LRFD design of substructures and they have designed several projects using the LRFD method since its use went into effect in 2008. Even with this training and experience, there are many issues that remain uncertain such as site selection and site variability determinations. The geotechnical consultants may face a greater challenge and more obstacles without the training that provides a better understanding of LRFD principles. For example, a geotechnical consultant working on a DOTD project arbitrarily used *high* site variability in the design of pile foundations as a conservative approach avoiding the site variability evaluation process. This is somewhat analogous to the common practice in the ASD method of arbitrarily selecting a safety factor. However, it is not an acceptable LRFD practice because a basic principle of the LRFD method is to design for a pre-determined risk level. By arbitrarily selecting the site variability, the risk level of the design is unknown thereby violating this basic principle.

Resources. Geotechnical engineering resources are limited and will be strained due to the requirements for verification tests either static or dynamic load tests. For example, the number of dynamic load tests required for a driven pile project increases significantly from the ASD to the LRFD practice. The DOTD currently has the capability of operating two pile driving analyzers (PDA) simultaneously. However, the additional PDA work will drain all the resources available for it. Compounding this problem is the requirement of additional geotechnical engineering hours to support the LRFD method. The additional engineering support services required for the LRFD method will make it increasingly difficult to meet project needs with the current staffing level. The geotechnical consultant community has similar limitations. There are a limited number of qualified consultants that have the experience with PDA testing and the associated CAPWAP analysis. It will not be possible to meet the demands of the LRFD practice

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providing the necessary quantity and quality of work if workload is expanded to beyond the capacity of the geotechnical engineering community without implementation plans to address the needs.

Complexity. Another task is to train the field personnel. Using the ASD method, the pass/fail field decision can be made with relative ease. However, using the LRFD method, the field decisions to accept or reject a load test has to be evaluated with the information from the previous load tests and consideration for the method of analysis on which the resistance factors are based. It is much more difficult to make this kind of qualitative decision in the field.

Quality. The largest impact of the LRFD method implementation is the increased cost of conducting geotechnical engineering investigation. As discussed, almost all phases of geotechnical engineering are impacted by the conversion to the LRFD method. With the current trend of reducing government size, the chance of increasing staff for the DOTD is minimal at best. The existing DOTD staff will have to cope with the increasing work load from surplus fund projects and an expanded scope of work. If the modest increase in the staff to support the LRFD practice is not allowed, the outcome is clear. There will have to be more outsourcing of the work to consultants that have minimal exposure to the LRFD practice requiring more oversight and therefore a greater demand on the DOTD staff. It appears that the immediate outcome will be a much longer implementation period for the LRFD practice with the inherent increase in the construction cost and reduced quality in the geotechnical engineering.

Closure

The contents herein are based on a technical session presentation made by the author titled "LRFD Driven Pile Design" during the 2007 Louisiana Civil Engineering Conference and Show in Kenner, Louisiana. The author wishes to express his appreciation for the support of Kim M. Garlington, PE, the DOTD Pavement and Geotechnical Section administrator, and the resistance factor calibration work of Murad Abu-Farsakh, PE, and Sean Yoon with LTRC. The opinions expressed herein are solely those of the author and do not reflect DOTD policy.

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