THE LOUISIANA CIVIL ENGINEER

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

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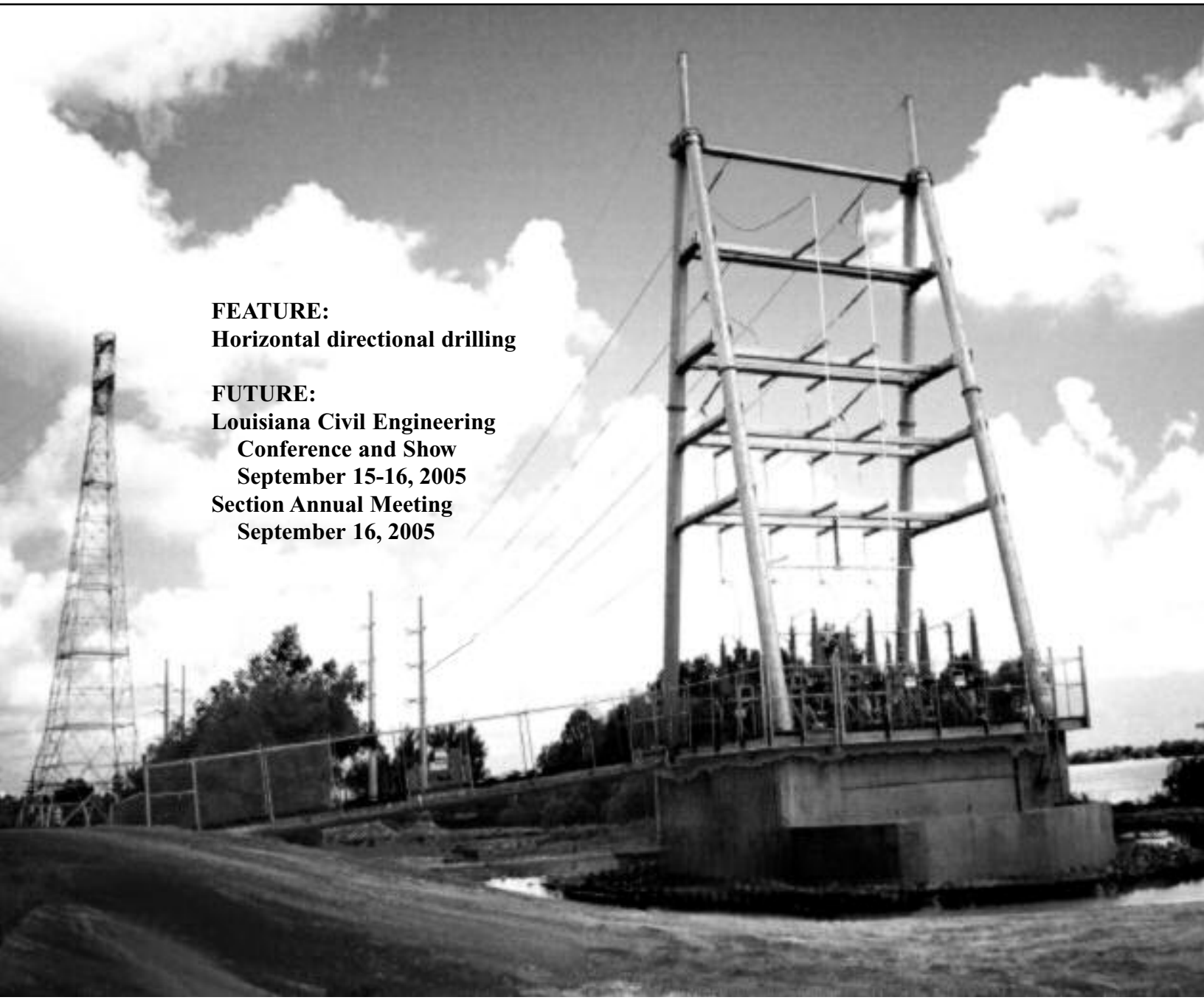

FEATURE:
Horizontal directional drilling

FUTURE:
Louisiana Civil Engineering Conference and Show
September 15-16, 2005
Section Annual Meeting
September 16, 2005

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THE LOUISIANA CIVIL ENGINEER

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

President's Message

Norma Jean Mattei, PE

Life Members

I recently had the pleasure of inviting the Section's newest Life Members by letter to attend the awards banquet that is part of the Section Annual Spring Meeting Conference hosted this year by the Acadiana Branch in Lafayette. There, as guests of the Section Board of Directors, they and their spouses were honored and presented with their Life Member certificates. This year there are 15 new Life Members in the Section — 3 from the Acadiana Branch, 3 from the Baton Rouge Branch, 6 from the New Orleans Branch and 3 from the Shreveport Branch. I would like to again congratulate these fine men on attaining their Life Member status and to wish them well in all of their future professional and personal endeavors.

You may be wondering — especially if you are a younger member — what you have to do to attain Life Member status. Life Member status is an ASCE membership grade. It is considered an honor and a privilege that is conferred on the ASCE members who make and live a career commitment to the civil engineering profession and who sustain that commitment with their membership in the ASCE as an outward manifestation of their commitment. To attain Life Member status, one must be a

- Member
- Associate Member or
- Affiliate Member

of the ASCE who has

- reached the age of 65 years
- paid dues in any membership grade other than Student Member for 30 or more years and
- 10 years of continuous membership immediately preceding attainment.

Life Members are exempt from paying membership dues. However, if they wish to continue their subscriptions to the ASCE's *Civil Engineering* and the *ASCE News* that were paid for as part of their membership dues, they must pay for them.

Happiness

No more ASCE dues! Now that would make me happy. Then I thought about it — *happiness* — in 20 years or so when I join the Life Member ranks, will I be able to say that I have been and that I am truly happy? Given the unalienable constitutional right to pursue my own happiness I wondered, how I am supposed to pursue it and what precisely do I have a right to? Is happiness a fate or a choice? What makes anyone happy, if they can honestly define it for themselves?

So being the engineering academic that I am, I decided to do a little research on happiness. *Subjective well-being* (SWB) is the nickname that experts in this field give to happiness. Since your hell may be my paradise, subjectivity is clearly the single greatest variable in the happiness equation. For example, homeless people in Calcutta have been found to be less unhappy than those in California because they have a stronger sense of community.

Each of us is born with a happiness *set point,* a genetic level around which our SWB tends to settle, regardless of what happens to us. A study of identical twins reared in different environments suggests that the set point determines about half of our disposition to happiness. "Happiness is genetically influenced but not genetically fixed," says professor emeritus of psychology David Lykken. If we really want to be happier, we have to learn the kind of things that we can do, day-by-day, to bounce our set point up. SWB-raising tools range from

- getting sufficient sleep and exercise
- nurturing close relationships
- maintaining an optimistic outlook and
- using your best skills in work and play

to — for some people — meditation and prayer.

Regardless of which particular tools we choose to help lift our own set point, I found something curious in my research. Specialists in this area have found that we are better off aiming for happiness moment-to-moment rather than trying to engineer happiness through long-term planning. This is because we human beings are fairly hopeless at predicting what will make us happy and how long our happiness will be sustained. Harvard psychologist Daniel Gilbert says, "We usually overestimate how things will affect us and rarely underestimate them." This discrepancy, known as the *impact bias*, causes a great deal of miswanting. For example, we work, scrimp and save for a better house, only to find ourselves too exhausted from overwork once we attain it to enjoy the new swimming pool.

Experts agree that a lifetime of chasing the almighty dollar rarely raises one's SWB. Once middle-class comforts are in place, the link between income and happiness becomes surprisingly weak. Gilbert agrees: "The first 40 grand makes a dramatic difference, but after basic needs are met, the next million does almost nothing." Hmm, I don't know about that!

A single, consistent factor in SWB studies is the critical need for a close connection with others, the camaraderie of friendship and other close relationships. Friends are good, and family is even better in serving this need. In a survey of 23,000 Americans over the past two decades, 41 percent of those who were married described themselves as "very happy," while only 22 percent of those who were never married, divorced, separated, or widowed would agree. Psychologist David Myers reports that "Intimacy, commitment and support do — for most people — pay emotional dividends."

Martin Seligman, the godfather of the positive psychological movement, developed a 3-zone model of happiness. The first zone — the Hollywood view — is attained by getting as much positive emotion as possible — more money, more beauty, more power, more chocolate, more shoes, more of everything... The second zone is attained through discovery of one's signature strengths, such as honesty, kindness, forgiveness, ingenuity, the love of learning... The third zone consists of the use of one's strengths in the service of something larger than one's self.

Work

Similar to happiness, there are 3 basic approaches to work that are independent of occupation. Psychiatrist Howard Cutler says, "People tend to see work as a job, a career, or a calling." As a *job,* work is seen as a means to an end — money — offering no other reward. As a *career* work is seen as a deeper personal investment, marking achievements not only through monetary gain but through advancement within an occupation or profession. As a *calling,* work is seen as a passionate commitment for its own sake. People with a calling focus as much on fulfillment — relationships; how their work affects the world — as on monetary gain.

Results of a study of people in various occupations, from menial to high-level, found that reported SWB-levels were consistent with the approach each individual took toward his or her work. Those who viewed their work as a calling had a significantly higher SWB than those who viewed their work as a job or a career.

Perhaps we are fortunate to have chosen civil engineering as our profession. It is certainly a profession that allows us to use our strengths in the service to something larger than ourselves. Sometimes we lose sight of this because we are so wrapped up in the details of getting that project completed on time and within budget. We forget that the project on which we are working is ultimately going to benefit society — a sewerage treatment plant, a pump station, a bridge, a

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About the cover: A visible part of the horizontal directional drilling project presented in the feature article. The completed concrete termination structure with its A-frame structure installed and carrying the overhead transmission lines to the existing system. Also visible at the top of the termination structure are the 8 termination assemblies transitioning underground transmission cables to overhead transmission lines.

Horizontal direction drilling

By Arthur J. Smith, III, PE

Introduction

In December of 2002 Entergy commissioned Waldemar S. Nelson and Company, Inc. to provide a screening study to determine if *horizontal directional drilling* (HDD) could be used to install an electrical transmission line under the Mississippi River just downriver from the City of New Orleans. The study was required to not only determine if the project was technically feasible and practical but if the regulatory agencies could provide the required permits to meet Entergy's schedule. In a few short weeks, it was determined that the project was technically feasible and practical, and that the governing agencies could permit the project in a timely manner. The selected design called for a 40" diameter bundle of 12 high density polyethylene (HDPE) pipes forming a duct consisting of 8 - 10" peripheral pipes, 3 - 2" pipes and 1 - 18" center pipe to be installed under the Mississippi River. Once installed, 230 kV electrical transmission cables would be pulled through the 8 - 10" pipes and fiber optic cables intended for future use would be pulled through the 3 - 2" pipes. The 18" center pipe provided several important functions that include

- maintenance of the circular shape of the 40" pipe bundle
- sufficient cross sectional area to resist pullback (discussed later) stress
- the spacing required to adequately dissipate heat generated by the electrical transmission cables in service and
- access for the 4" water line (discussed later) used during pullback operations.

In January 2003 the detailed design and permitting effort for the river crossing was initiated with a target completion date of June 1, 2004. The under-river electrical transmission line crossing was energized May 1, 2004, 30 days ahead of schedule and under budget — a crowning achievement for this challenging and successful project. What follows are the highlights of the interesting and challenging design and construction details.

Location

Siting

The most logical site for the entry and exit points of the HDD was the batture close to where the existing electrical transmission towers were located. This would allow under-river transmission lines to connect directly to the land-side transmission system and provide the shortest, most direct path for the HDD operation. As the detailed design progressed and geotechnical data became available, it was quickly realized that the window required for a HDD installation did not exist at this most logical and preferred crossing.

The *window* required for the HDD installation was defined by the U.S. Army Corps of Engineers (Corps) and the regulatory agencies responsible for the Mississippi River flood protection system. These requirements are a minimum 10' clearance above the bank stability curve and a minimum 25' clearance below the river bottom or the revetment. The bank stability curve clearance is critical to protect the integrity of the river bank and the levee system because breaching the bank stability curve could compromise the integrity of the levee system leading to bank and levee failures.

The 25' minimum clearance under the river bottom and the revetment is also critical to provide cover and protection for the duct from marine activities and accidents on the river resulting in items being dropped or dragged on the constantly changing river bottom. The most obvious example would be ship anchors, especially considering that there is an emergency anchorage located just upriver from the crossing. It is interesting to note the river bottom in this area is made up of mounds of sediment continuously moving downriver that are approximately 1½ stories high.

The lack of a window required for the HDD installation in the preferred area required an investigation into adjacent alternate sites that would meet the required criteria while having the least impact on the land-side transmission line tie-ins. The x-y-z coordinates from the river bottom, revetment and batture surveys, and the location of the bank stability curves were used to develop a three-dimensional model of the river upstream and downstream of the preferred crossing site. This investigation revealed a feasible route indicated by the profile view in Figure 1 and the plan view in Figure 2. Located 1200' downriver of the preferred location on the west bank, this route provided the required window

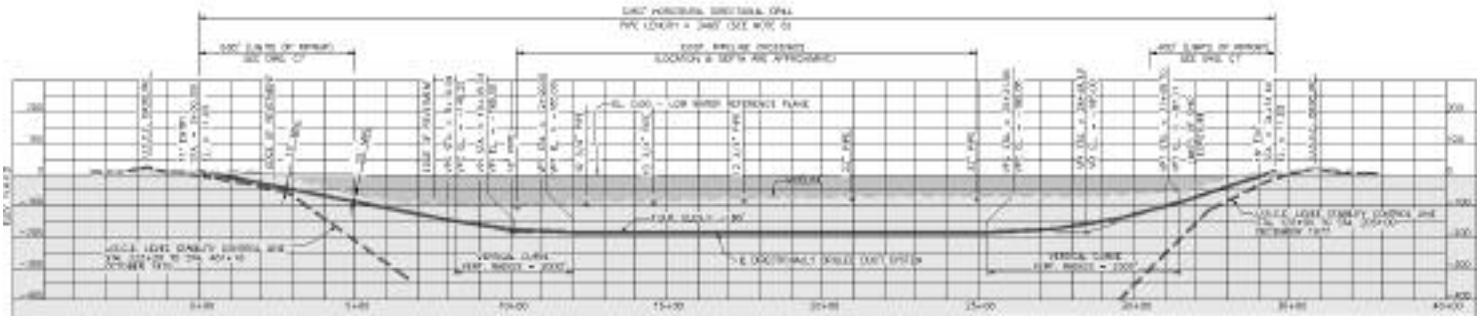

Figure 1. Profile view of the river showing the location of the planned drill line for the planned HDD river crossing project.

Arthur J. Smith, III, PE, earned his BS degree in electrical engineering from Tulane University in 1978. He is a licensed professional engineer in the states of Alabama, Alaska, California, Louisiana, Mississippi and Texas. Smith's professional experience includes many areas of electrical engineering with particular emphasis in electrical safety, power generation and power distribution. Smith is a member of the Society of Tulane Engineers, the National Fire Protection Association 70 National Electrical Code, Code Making Panel 11; and he is active in several components of the Institute of Electrical and Electronics Engineers. Smith joined Waldemar S. Nelson and Company, Inc. as a part-time student employee in 1975, and became a full-time employee upon graduation in 1978. He has since remained in continuous service with the Company and is currently a Vice President. Smith has authored and co-authored a number of technical papers presented at national and international conferences.

Editor's note: This article was extracted from the article by the author titled "Mississippi River 230 kV transmission line under river crossing" published in the "Consultant," the newsletter of Waldemar S. Nelson and Company, Inc., Vol. 47, No. 4, July/August 2004. It is the basis for the author's presentation made during the 2004 Louisiana Civil Engineering Conference and Show and titled "High-tech under the Big Muddy: Entergy's Mississippi River crossing project."

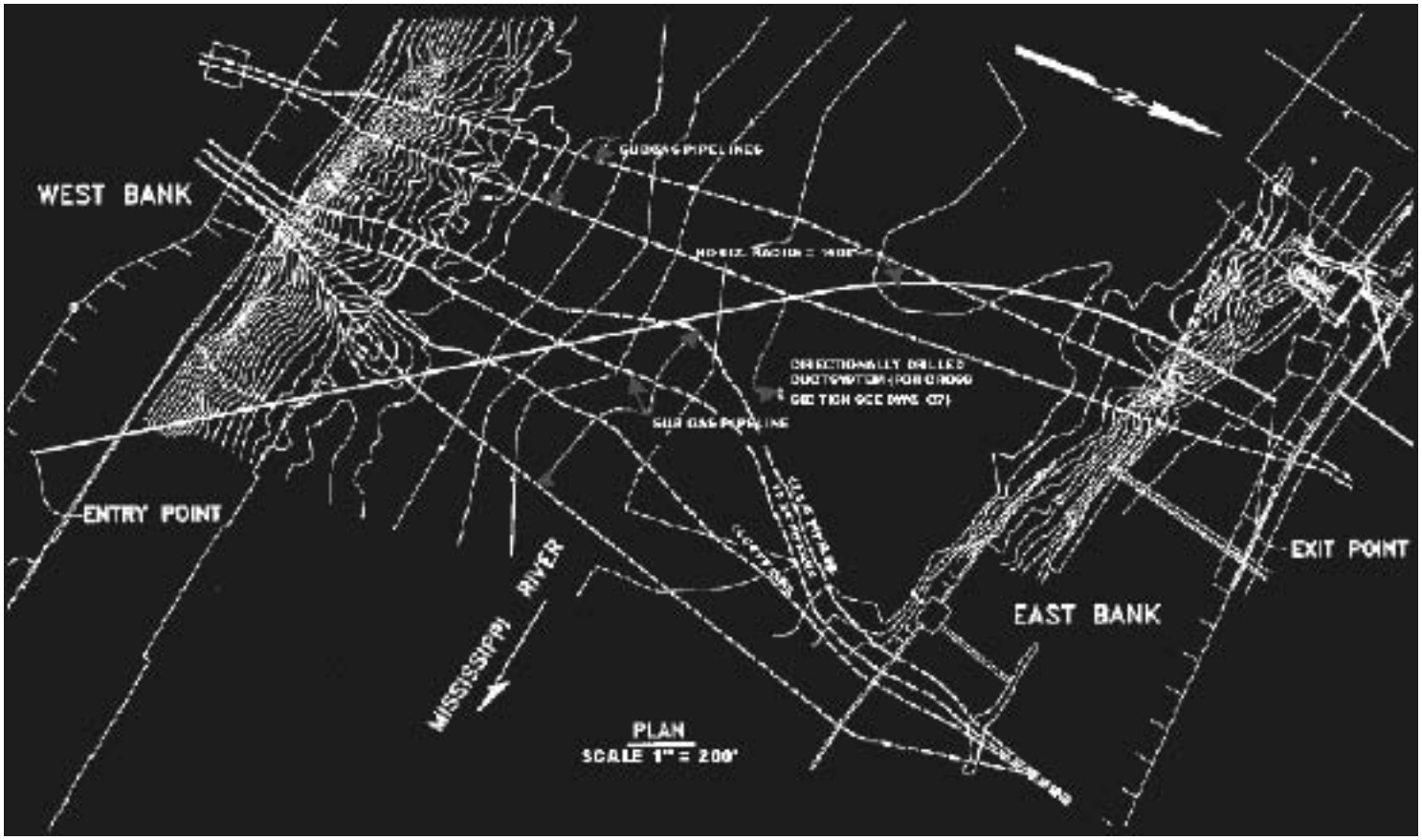

Figure 2. Plan view of the river crossing project site showing the planned location of the drill line.

for the entire length of the HDD. The "jog" in the west bank levee that is shown in the aerial photograph provided in Figure 3 was constructed a number of years ago when the existing levee was relocated away from the river. This location provided the required window for the HDD and an excellent site to locate the horizontal drilling rig.

Drill line

The HDD route was planned to meet the minimum clearance criteria of the window. It required an 11° angle decline entrance slope of the drill line at the west bank entry point to a 2000' radius vertical curve transition to a horizontal drill line at elevation -185. (All elevations provided are in feet and based on the North American Vertical Datum.) The drill line then crossed the remainder of the river at elevation -185 passing under 6 gas transmission pipelines that cross the site and proceeded to a compound curve - a 2000' radius vertical curve and a 1500' radius horizontal curve. The compound curve was required to thread the drill line between 2 dolphins and achieve its planned 18° angle

Figure 3. Aerial photograph of the planned HDD river crossing project site.

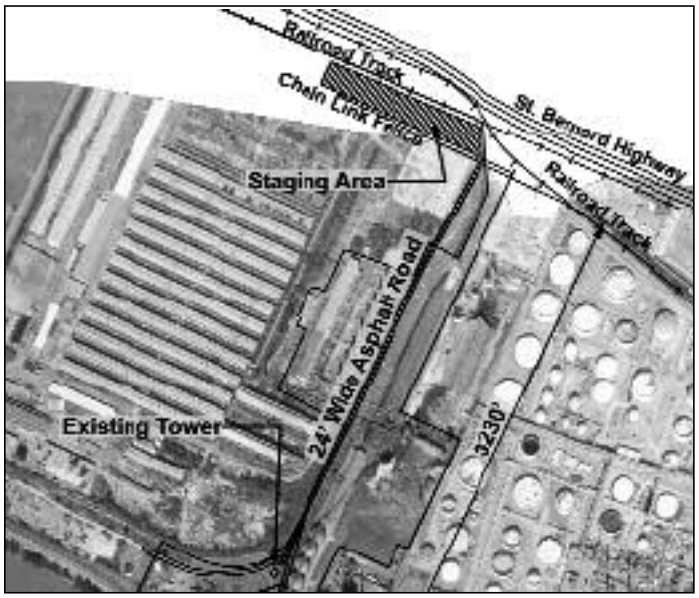

Figure 4. Aerial photograph showing an outline of the backstring fabrication site.

Figure 5. Temporary bridge for the backstring to provide access to the plant facilities on either side of the backstring fabrication site.

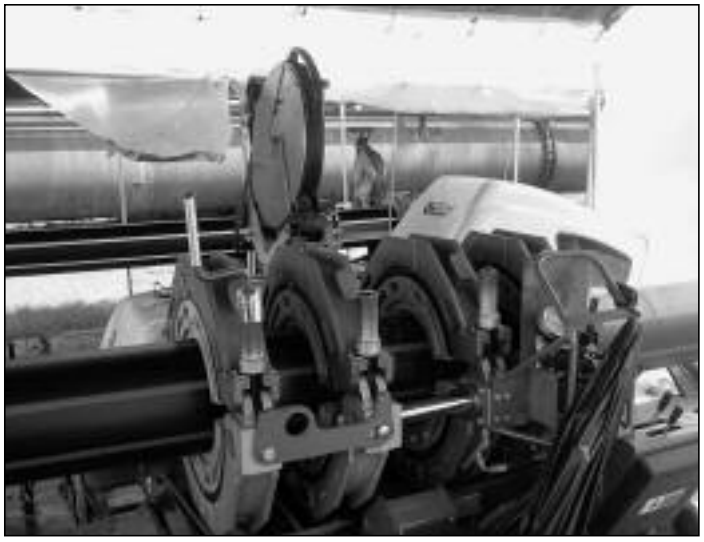

Figure 6. Fusion machine for joining the 50' high density polyethylene pipe segments.

incline exit slope as the drill line approached the east bank exit point. This path not only meets the requirements of the Corps, it also provides maximum cover under the river bottom and revetment, and maximum clearance from the gas pipelines.

Backstring fabrication

Site location

With an acceptable drill line found, the formal permitting process and the detailed design to procure the permit and construct the crossing proceeded. The HDD process requires the pullback of a backstring in one continuous length through the drill hole. The *backstring* is the duct that would eventually carry the transmission lines under the river. This required a fabrication site for the backstring or duct adjacent to the east bank exit point that is approximately 3900' long and wide enough to accommodate its fabrication.

An existing plant road in an adjacent east bank facility was identified that would allow the bulk of the backstring fabrication without significant interference with plant operations. To accomplish this, the fabrication site shown in Figure 4 required the location of one temporary bridge as shown in Figure 5 to support the backstring and provide plant operations personnel access to the facilities either side of the road during fabrication.

The plant road was not long enough to accommodate the fabrication of the entire backstring and a portion of the Port of St. Bernard property along the St. Bernard Highway was required to complete the fabrication. The conditions on the Port property along the fabrication site required a pontoon bridge to support the backstring.

Process

The 10" and 18" diameter pipes that form the duct are HDPE that are supplied in 50' lengths and fused together to fabricate the 3900' continuous backstring required to cross the river. To fuse the HDPE pipe segments, a *fusion machine* pictured in Figure 6 is clamped to the ends of the pipe segments to be joined. Rotating knife blades shave the pipe ends to form smooth and true matching faces. The rotating knife blades are removed and a heated plate is inserted between the pipe faces to bring the HDPE material to a semi-molten state — the fusion temperature. The plate is removed and the fusion machine brings the semi-molten pipe ends together maintaining a specified contact pressure until the pipe ends cool sufficiently to achieve an adequately bonded joint.

The fusion process leaves beads of the HDPE pipe material that is squeezed from the joint during fusion. The bead on the inside surface of the pipe joint must be removed to allow the electrical transmission cables to be successfully pulled through the pipe. The bead on the inside surface is removed with a manually oper-

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Figure 7. Trailer mounted HDD rig shown in position to begin drilling operations.

Figure 8. End view of the drill bit oriented with its 2 open mud jets located at the top and its plugged mud jet located at the bottom.

News from the Branches

SHREVEPORT

By Kurt M. Nixon, PE, President

The April general membership meeting of the Branch will be held on the Louisiana Tech University campus. It will feature a one PDH ethics presentation to be made by Tech Professor Aziz Saber and a catered meal will be served. The planning for this meeting has been in the works for a couple of months as a cooperative event between the Louisiana Tech ASCE Student Chapter and the Branch.

The Branch's annual spring golf tournament is scheduled for May 9th at Southern Trace Country Club. This tournament is always a great event held during a great time of the year. The proceeds from the tournament provide the funding for two scholarships for civil engineering students at Louisiana Tech — one for an outstanding junior and another for an outstanding senior. If you have any questions concerning the tournament, please contact Ashley Sears at asears@afjmc.com.

Elba Hamilton has resurrected the Branch's dormant Younger Member Committee. Elba has made a great effort to plan and develop ideas for both social and civic activities in which the members of the Branch YMC will have the opportunity to participate. One idea that she and Ashley Sears are planning to implement is so appreciated that there are plans at the Section level to implement it statewide. Way to go, Elba and Ashley! So, if you have the joy of being under 35 and would like to hang with some of your fellow peers in the profession let us know so that we can keep you apprised of the future YMC activities scheduled.

The February general membership meeting of the Branch was a joint meeting with the Shreveport Chapter of the Louisiana Engineering Society and it was an outstanding success. The featured speaker was William L. "Bill" Melancon, PE — an attorney and licensed engineer. He made a very informative presentation on how engineers can better protect their clients and themselves from liability claims and contract disputes. From the number of members who attended — over 45 — this is an area that is and should be of significant concern to many civil engineers. Hopefully, few have actually experienced any serious problems in this area and will be able to reduce the risk of future problems because of Bill's presentation.

On behalf of the Branch, I wish to again extend its appreciation to Bill for traveling from Lafayette to Shreveport to make his presentation. Also, I wish to thank the Shreveport Chapter of the Associated General Contractors for the use of their building and the members of the LES Shreveport Chapter who helped arrange Bill's visit.

The March general membership meeting of the Branch was very well attended and will be remembered as one of the better meetings of the administrative year. Professor Erez Allouche from Louisiana Tech was our planned speaker, however a family emergency required his return home to Israel. Our prayers and sentiments are with him and his family. In his place Professor Reymond L. Sterling, Director of the Trenchless Technology Center at Louisiana Tech University, provided a great overview of trenchless technology including; new installations, rehabilitation, and condition assessment. On behalf of the Branch I wish to extend a hearty thank you to Professor Sterling for rearranging his busy schedule to make his presentation to the Branch with less than a 36-hour notice.

If you have an interesting news item you would like to share with your fellow Branch members, any ideas or requests for meeting topics, or you are interested in publishing an article in the newsletter, please email me at kurt@owenandwhite.com. I look forward to visiting with you during the next Branch membership meeting.

BATON ROUGE

By André M. Rodrigue, PE, President

The Branch ventured away from its usual general membership meeting luncheon venue and format in March to meet in the facilities of the *Vincent A. Forte River and Coastal Engineering Research Laboratory.* This new laboratory facility, located on the LSU Baton Rouge campus, houses a small scale model of the Mississippi River delta. Clinton S. Willson, PE, the featured speaker, briefed the Branch members present on the history of the river model that was built by Sogreah Consultants in France. The $1.1 million required to fund the river model and the laboratory facility to house it was provided by the Louisiana Department of Natural Resources, the LSU College of Engineering and Forte and Tablada, Inc.

The river model is initially intended to perform studies to predict large scale river behavior that is used to develop effective projects for the diversion of the sediment-ladened river water to restore and maintain the subsiding Gulf coast area of Louisiana. The scale of the model is exaggerated in elevation to a 1:500 vertical scale compared to a 1:12000 horizontal scale. Willson explained the difference between *small* and *large* diversions in terms of the flow rates being diverted from the river — from 15,000cfs to 500,000 cfs respectively. For a frame of reference, the U.S. Army Corps of Engineers allows 1.2 million cfs flow through the river that is represented by the river model. This flow is at maximum flood stage that is controlled by the diversion of flood waters through floodways and control structures up river.

Several scenarios have been evaluated for proposed diversion projects along the river delta. The scenarios studied are based on long-term effects that are estimated to occur in time periods ranging from 10 to 100 years. The model calibration results in one hour of model time being equivalent to two days of real river time.

The water level along the river model is monitored using tiny stakes as river gauges. A dye is injected into the river model's water to trace flow patterns. A special sand-like substance manufactured by Sogreah is introduced into the river model's upstream channel to evaluate potential sedimentation.

Because of the large size of the river model, a gantry walkway provides access to any area of the model without interrupting a test run. To obtain a bird's eye view, a camera is installed on a large gypsy crane giving a view of the entire model in one photograph. At the end of a model test run, the researchers

- evaluate the photographs
- perform a gradation analysis of the sand-like substance at outfall
- consider dredging requirements and
- consider the impact of a rising sea level on the river stages.

Though the model does not provide quantitative results, the analysis of qualitative results reflecting the impact of the river's behavior for the various proposed diversion projects and scenarios provide intriguing and valuable results. The results provided by the model thus far have sparked interest in the evaluation of additional diversion projects along the Atchafalya River and other major waterways.

The Branch awarded $500 scholarships to 2 civil engineering students during the Engineering Week banquet in February. The banquet held this year in the facilities of the Baton Rouge Country Club is sponsored by the Baton Rouge Chapter of the Louisiana Engineering Society. Civil engineering students Shannon Chambers of Southern University and Garrett Sutley of Louisiana State University were the scholarship recipients.

❖ Quote ❖

Ethics: *It is difficult to get a man to understand something when his salary depends on his not understanding it.*

- Upton B. Sinclair, writer and politician

NEW ORLEANS

By Deborah Ducote Keller, PE, President

The Branch continues to work on several initiatives to bring more meaningful programs to its members and the civil engineering community. In February, many of our Branch members were involved in the community outreach to middle school and high school students. They participated in the Louisiana Engineering Society sponsored MATHCOUNTS competition and the Greater New Orleans Science Fair. Both events were held in the facilities of the University of New Orleans.

The Branch and its Structures Committee presented awards to the winners of the Greater New Orleans Science Fair in the civil engineering and the structural engineering categories respectively. It was an honor to present the students their awards as recognition for their achievement in researching and effectively presenting their engineering topics.

The Tulane University and the University of New Orleans ASCE Student Chapters are both hard at work in preparation for the competitions planned during the upcoming Deep South Conference. The Conference consisting of ASCE student chapters from Louisiana, Mississippi and Arkansas is being hosted by the University of Louisiana at Lafayette Student Chapter in Lafayette in early April. The students have dedicated many hours to showcasing their civil engineering knowledge while learning and applying valuable teamwork and leadership skills along the way.

The Structures Committee, chaired by Om P. Dixit, PE, has conducted several technical seminars and has tentatively scheduled additional seminars for May 5, June 9, August 16, and October 13. All of these seminars are scheduled during the evening hours in the University of New Orleans, College of Engineering auditorium.

The regular attendance during the recent Branch general membership meetings and luncheons has been approximately 90 people. This higher than usual attendance is apparently due to a winning combination of excellent topics and a selection of good restaurants housing the meetings. During the March general membership meeting, the guest speaker was Joseph R. Becker, PE, with the New Orleans Sewerage and Water Board. He made a presentation concerning an ongoing sewer system evaluation and rehabilitation program. Upcoming luncheons have been scheduled for April 27, May 25, and June 22.

Chris Sanchez, Branch Chair of the 2005 Louisiana Civil Engineering Conference and Show, is hard at work with the various committees planning this annual event. This work is being done in cooperation with the Branch's co-sponsor, the Louisiana Chapter of the American Concrete Institute. The Conference is scheduled for September 15th and 16th in Kenner.

It was my privilege to attend ASCE National Government Leadership Training in Government Relations in Washington, D.C. March 8-9 as the Section's representative. I was proud to represent Louisiana's civil engineers participating in the discussions regarding America's infrastructure crisis. There is a detailed account of this event provided elsewhere in this issue.

Information about many New Orleans Branch activities can be found on the recently redesigned Branch website, www.asceno.org. It includes a calendar of events and the links for the Branch officers, directors, and committee chairs provided for easy contact. Branch members are encouraged to visit the website and register their email addresses to receive regular email notices of Branch activities.

Structures Committee

By Om Dixit, PE

The annual Greater New Orleans Science Fair was held March 1, 2005 with over 500 entrants presenting topics ranging from medicine to engineering. The Structures Committee of the New Orleans Branch participated in the Science Fair by providing judges for those projects related to civil and structural engineering and by funding two awards each in the junior and senior divisions. Om Dixit presented awards to the winners March 3rd in an evening ceremony that was held on the University of New Orleans campus.

There have been 2 seminars sponsored by the Committee and held since the last journal publication. A brief summary follows:

Non-destructive testing of concrete: Five test methods that can save you money was presented March 2, 2005 by Luke Snell, PE from Edwardsville, Illinois. The 5 concrete test methods were discussed in the context of their application and expected accuracy. The methods discussed are (1) *Rebound Hammer* — the quickest and easiest method to estimate concrete strength; (2) *Moisture Meter* — to estimate the moisture in concrete; (3) *Metal Locators* — to determine the location and depth of reinforcement/find safe coring/drilling locations; (4) *Non-contact Thermometer* — to determine concrete temperature and monitor curing temperature; and (5) *Distance Measuring Devices* — to measure distances, areas and volumes electronically without a measuring tape. Snell explained that the use of the non-destructive methods discussed that use simple, portable equipment could save a significant amount of the money when compared to the cost of the more expensive, destructive investigations. At the end of the seminar, the nondestructive testing equipment discussed was demonstrated and those in attendance were given the opportunity to handle it.

API RP 2A Section 17 (2003 Revision) — Recommended Practice for the Assessment of Existing (Offshore) Platforms was presented January 27, 2005 by Paul Versowski with Chevron Texaco. The subject of the seminar presented was the requirements to measure fitness in the assessment of all off-shore structures that is required every 5 years. Currently, all platforms in the Gulf of Mexico should have undergone an exposure category evaluation, a platform assessment initiator review, and a preliminary screening for further assessment. The presentation covered the logic of platform assessment, the recent additions and clarifications to Section 17, and the work presently under way to incorporate Section 17 into a new recommended prac-

(Continued on Page 16)

Some of the participants in the hands-on demonstration of the non-destructive concrete testing equipment following the seminar are (from left) Norma Jean Mattei, 2 unidentified participants, Luke Snell, Darrell Elliot, and Bill Sewell.

ACADIANA

By Kimberly D. Landry, EI, President

The Branch Board of Directors had the opportunity to participate in the Region II Science Olympiad on the University of Louisiana at Lafayette campus February 19, 2005. The Board members and volunteers from the University of Louisiana at Lafayette ASCE Student Chapter, provided judging for Divisions B and C of the *Storm the Castle* competition. Teams participating in this competition design, construct, calibrate and operate a device capable of launching a projectile as far and as accurately as possible using only the energy from a falling counterweight.

The February Branch membership meeting featured special guest speaker Dee Stanley, Chief Administrative Officer for the Lafayette City-Parish Consolidated Government. He was invited to discuss the progressive and controversial *Fiber to the Home / Fiber for the Future* initiative of the Lafayette Consolidated Government and Lafayette Utilities System. The ultimate goal of *Fiber to the Home* is for the local, publicly owned utility provider, Lafayette Utilities System, to build a fiber-optic network that will provide its benefits directly to area homes and businesses. This would provide its customers with a high speed Internet connection over a single line from the Lafayette Utilities System that is faster than provided by

- DSL or cable modem service
- the latest digital cable technology and
- local and long distance telephone service.

The Board participated in the *Engineering Day* activities hosted by the College of Engineering at the University of Louisiana at Lafayette on March 18, 2005 by manning an *industry* booth and fielding questions about civil engineering from visiting high school seniors. Engineering Day is an annual event intended to introduce high school students from across the state to engineering prior to their entering the university system. The students go on guided tours of all of the engineering departments, have a chance to speak to college engineering students and practicing engineers, and participate in Engineering Day events such as the *egg drop* and the *mystery design* contests.

University of Louisiana at Lafayette ASCE Student Chapter met its substantial Engineering Day hosting obligations while planning to host the Deep South Conference April 7-9, 2005. Congratulations to the Chapter for doing such a fine job in the midst of its significant obligations and best wishes to those universities who by winning certain of the regional conference competitions qualified for — and are looking forward to — the national competitions.

Due to the demands of the ongoing preparations to host the 2005 Section Annual Spring Meeting and Conference, the Branch did not have a membership meeting in March. However, the April membership meeting and luncheon featured guest speaker Gerhard Lang whose topic was "Introduction to mechanized tunneling and pipe jacking."

The May membership meeting was a special treat — the annual crawfish boil at the Acadiana Park pavilion in Lafayette. Jointly hosted by the Acadiana Branch, the Lafayette Chapter of the Louisiana Engineering Society and the Lafayette Section of the Institute of Electrical and Electronics Engineers the crawfish boil gives us the opportunity to thank our members for their support by providing the food and beverages for this event free. On behalf of the Board, I would like to thank our active members for their consistent attendance and participation during the monthly membership meetings.

On behalf of the Branch, I would like to thank everyone who attended the 2005 Louisiana Section Spring Meeting and Conference hosted by the Branch from March 30 through April 1. We hope that everyone who attended the Conference enjoyed the presentations and took the opportunity to visit with their fellow ASCE members.

On behalf of the Board, I would like to thank the Conference sponsors and exhibitors, whose financial contributions made the Conference possible, and our guest speakers for their support and participation during the Conference. A listing of the Conference sponsors and exhibitors is posted on the Branch website at www.asceacadiana.net/2005conference.htm. We are also grateful to Patrick J. Landry, PE, Section Director-at-Large, for presenting the Life Member certificates during the Awards Banquet, and to Jerome M. Klier, PE, the Louisiana Section Student Awards and Activities Committee Chair, for presenting the Student Awards during the banquet.

I would like to express my personal appreciation for the tireless work provided by my fellow Branch officers in organizing the Conference. They selected the topics for the technical sessions, recruited speakers, and handled the big and small items on the to-do list that were essential to the success of the conference. The highlights of the Conference appear elsewhere in this issue.

— Calendar of Events —

June 2-3, 2005	**ASCE Seminar * on Design and Strengthening of Shallow Foundations, Nashville, Tennessee.**
June 2-3, 2005	**ASCE Seminar * on Design of Waste Containment, Nashville, Tennessee.**
June 23-24, 2005	**ASCE Seminar * Comprehensive Site Design Workshop, Atlanta, Georgia.**
June 26-29, 2005	**Tri-State Engineering Society Meeting (Louisiana Engineering Society, and the Arkansas and Mississippi state societies), Destin, Florida. For more information visit the LES website.**
July 28-29, 2005	**ASCE Seminar * on Earthquake Induced Ground Motions, Atlanta, Georgia.**
August 11-12, 2005	**ASCE Seminar * on Pumping Systems Design, Atlanta, Georgia.**
August 25-26, 2005	**ASCE Seminar * on Bridge Rehabilitation, New Orleans.**
September 15-16, 2005	**Louisiana Civil Engineering Conference and Show, Kenner. For more information visit New Orleans Branch website.**
September 16, 2005	**Annual Meeting of Louisiana Section, New Orleans. For more information visit New Orleans Branch website.**
September 22-23, 2005	**ASCE Seminar * on Water Hammer in Transmission and Distribution Systems, Dallas, Texas.**
September 29-30, 2005	**ASCE Seminar * on Finite Elements, Memphis, Tennessee.**
September 30, 2005	**Tulane Engineering Forum: Engineering in a coastal environment. For more information visit www.eng.tulane.edu/tef.**
	***For more information, call ASCE toll free at (800)548-2723 or visit the ASCE web page www.asce.org.**

Book review: *Unstuck*

By André M. Rodrigue, PE

It is possible that you can find your professional life — your career — *stuck.* You know the feeling. You are trying to get somewhere in your career, but you are being hindered. Either you do not know how to get where you want to go or there are barriers in the way of getting there. When this happens, you need to unstick your career.

You may want to stay with your current employment situation but feel overwhelmed or frustrated that you just cannot achieve all you would like with your current team. You may be seeking a new position that offers an environment that fosters achievement. Authors Keith Yamashita and Sandra Spataro have written a book, *Unstuck: A Tool for Yourself, Your Team and Your World,* published in 2004 by the Penguin Group which addresses these issues. For more information visit www.unstuck.com. They assert, everyone who is trying to achieve something gets stuck sometime. "Sometimes getting stuck is merely a sign that you are attempting something ambitious and pushing your team hard." The question is, How do you get unstuck?

To understand how to get unstuck, you have to understand the causes for getting stuck in the first place. The authors describe the serious seven causes of getting stuck:

1. You are *overwhelmed.* You are stuck because you do not know what to do next. This is caused by having no process through which to attain your goals.
2. You are *exhausted.* You are working very hard but politics and other factors keep getting in the way of achievement. This is caused by concentrating too much in certain areas instead of balancing your effort in all areas to achieve a common goal.
3. You are *directionless.* Again, you are working hard but see little accomplishment. This is caused by lack of a clear strategy.
4. You are *hopeless.* You feel defeated — uninspired. This is caused by no apparent purpose for your work.
5. You are *battle-torn.* You and your team cannot get along. This is caused by a lack of a healthy interaction between team members.
6. You are *worthless.* You are unable to recognize success. This is caused by unclear measurement of results and commensurate rewards for achievement.
7. You are *alone.* You and your coworkers do not feel a sense of belonging. This is caused when your team loses its *culture*.

So let us say you experience to some degree all of the above causes for getting stuck. What can you do about it? The authors recommend that you evaluate your role in several areas to get back on your feet. This is relevant whether you are seeking to improve the working environment in your current job or identify a positive working environment in a new job. Yamashita and Spataro urge the reader to focus on the following areas that together will get to the root cause(s) of being stuck:

Your *purpose.* The driving ambition that shapes what you and your organization aspire to achieve and work collectively to make a reality.

Your *strategy.* The smart way you go about achieving your purpose or the way you and your coworkers interact. How you and your team are assembled and rallied to execute the strategy and — as important — how you treat each other to get the work done.

Your *structure and process.* How is your team structured? -

- Who makes the decisions
- Who is included and who is not
- Who has authority over whom
- Who is in charge and
- Who has informal authority — not necessarily a title but lots of influence?

What is its formal process — the understood method by which the team collaborates to get the work done?

Your *metrics and rewards.* The activities and actions that get measured — or at least to which attention is paid — as indicators of whether your team or organization is delivering on its purpose. Once measured, your organization rewards those who are part of the accomplishment.

Your *culture.* The largely unwritten set of rules that govern behavior. As one CEO offered, it is how work gets done when you do not specify how the work should get done.

Once you have evaluated how each of these areas in your work environment affect your ability to achieve, you can choose a course of action in the areas that you deem to be problematic. What can you do to change your performance and what can you do to foster change in the performance of others when it comes to

- purpose
- strategy
- teamwork
- process
- metrics
- rewards and
- culture?

The answers to this question can help you get unstuck in your current job or effectively find a more fulfilling job to unstick your career.

Editor's note: This book review was André's president's message to his branch membership in the Baton Rouge Branch Newsletter, March 2005.

Branches invest in high-tech

The *Baton Rouge Branch* switched to an electronic newsletter sent by email to each of its members in March 2005. It was noted in this newsletter that the principal reasons for the switch were the additional cost to produce and publish (reproduce, address and mail) a paper newsletter and the additional time and effort that is required to do so. The April Branch newsletter will be the first delivered exclusively by email. The March newsletter was the transition issue published in both electronic and paper form to give Branch members the opportunity to provide or correct their email address in the national ASCE membership database accessed through its website, www.asce.org. The branches and the Section rely on the national ASCE membership database for all member contact information. Branch members in need of additional information are encouraged to contact the Branch President-Elect, Tommy Roberts, PE, at 225-952-4451 or at troberts@waskey.com.

The *New Orleans Branch* has relied upon its website, www.asceno.org, for several years as a cost-effective means to communicate with its members and others in the engineering community. Broad acceptance of the webpage as a primary communications source has been so complete that the Branch is hiring Carrollton Technology, a full-service technology company, to re-design it. The new website expected to be in service sometime this Spring will have a more contemporary look and provide

- a branch calendar that committee chairs can update
- an e-commerce capability for conference registration and fee payment processing
- a user-friendly, secure interface for officers and committee chairs
- a facility for customized reports and
- a database of members and others who attend Branch functions to email meeting notices.

From experience, the only thing worse than no website is an outdated one. The focus will be not only on using the website as a communication tool but a means to keep the Branch active and to archive information as a resource.

The *Acadiana Branch* tentatively converted to an e-newsletter during the 2003-2004 administrative year to conserve funds and eliminate the time involved with mailing the paper version. This was a trial period for both the Branch officers and members to determine which version was preferred. Those responsible for publishing the newsletter liked the ease of producing the digital version and the Branch Treasurer was equally pleased. There were difficulties encountered in regulating the content and size of the digital file so that those with dial-up connections could quickly access it. It was discovered to our surprise that the more vocal of our active mem-

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Highlights of the Annual Spring Meeting and Conference

By Kimberly D. Landry, EI

The 2005 Spring Meeting and Conference of the Section hosted by the Acadiana Branch was deemed very successful with over 90 registrants, 10 exhibitors, 11 sponsors, 14 guest speakers, and a special guest and keynote speaker, ASCE National President-Elect Dennis R. Martenson, P.E. The Conference was kicked off on Wednesday evening, March 30, with an informal meeting between members of the Louisiana Section Board of Directors and President-Elect Martenson followed by the crawfish boil ice-breaker and social. The crawfish boil was well-attended and boisterous despite the inclement weather. Our intrepid Conference photographer caught President-Elect and Wisconsinite Martenson befriending a crawfish - albeit, too late to save it.

The first full day of the Conference began Thursday at 7:30 am with registration and the opening of the exhibitors' display area that served as the break area between the concurrent technical sessions during the Conference. The Conference keynote speaker for the luncheon was ASCE National President-Elect Dennis Martenson. His speech primarily focused on the 2005 National Report Card for America's Infrastructure recently released by the ASCE. Martenson cited both national and state statistics provided by the Report Card. He also addressed the ASCE governance issues, the ongoing development of the Body of Knowledge that is defining the education required for a practicing professional civil engineer and that is associated with ASCE Policy Statement 465 — Academic Prerequisites for Licensure and Professional Registration — and the public relations efforts by the ASCE to familiarize the general public with the practice of civil engineers and its impact on their daily lives. Martenson also outlined the agenda that he plans to pursue his year as the ASCE National President — instituting a new, *long-term* strategic plan, recruiting and retaining more government-employed engineers, and encouraging more involvement from younger members.

The Awards Banquet scheduled that evening served to honor the Section members who attained their Life Member status in 2005. They are:

Acadiana Branch
William H. Hidalgo, Sr., PE
Kam K. Movassaghi, PE
Paul A. Richards, PE
Carroll G. Westbrook, PE

Baton Rouge Branch
Greer E. Coursey, PE
James C. Porter, PE

New Orleans Branch
J. A. Badeaux, Jr., PE
Arthur A. DeFraites, Jr., PE
Morris R. Heinzen
Leonce P. Waguespack, Jr., PE
Thomas R. Wartelle

Shreveport Branch
Lloyd G. Hoover, PE
Gordon M. Naquin, PE
Robert A. Neff, Jr.
Donald F. Sorgenfrei, PE

After completing dinner, those in attendance were introduced to Patrick J. Landry, PE, Section Director-at-Large from the Acadiana Branch, who presented the Life Member certificates to the 5 Life Members who were in attendance. Landry noted that Life Members must satisfy combined requirements of age, years of membership, and years of paying dues to qualify for the Life Member status. Landry introduced the Life Members to the banquet audience by presenting a brief biography of each as they were presented their certificate.

Arthur A. De Fraites, Jr., PE, earned from Tulane University his BSCE in 1953 and his MSCE in 1958. He is President of GSE Associates, Inc. Engineers, Architects, Surveyors, Planners in Houma, LA. Art has served in several volunteer leadership capacities in the Louisiana Engineering Society and the National Society of Professional Engineers and he has received numerous awards from the LES, the ASCE and the American Council of Engineering Companies recognizing his service in and to the profession. Art and his wife of 40 years Helen Starnes have 5 children and they like to travel. His favorite thing about his engineering practice is his service to the public and his profession. To graduating senior civil engineering students Art advises that opportunities for service are so numerous that he believes there is a partial vacuum in the profession's leadership resulting in few limits to the extent one can rise professionally who seeks to serve.

Lloyd G. Hoover, PE, earned his BS in 1965 from LSU, studied in the Geotechnical MS program at LSU from 1968 to 1971 and he has been President of Tetra Tech since 1971. Lloyd is a licensed real estate broker, a certified forensic engineer, a geotechnical engineer and an environmental engineer. Lloyd and his wife Bonnie — a real estate agent — have 4 children. In his free time Lloyd likes to hunt, fish and play golf. The favorite part of his engineering practice is helping engineers and laymen alike to answer questions and solve problems. Lloyd's advice to graduating civil engineering seniors is be professional. Put your profession first and be involved.

ASCE national President-Elect Dennis Martenson is introduced to a not-so-delicate Louisiana delicacy.

A small gathering in the Conference registration area.

Art DeFraites receives his Life Member certificate from Acadiana Branch President Kim Landry.

Lloyd Hoover receives his Life Member certificate from President Landry.

Kam Movassaghi receives his Life Member certificate from President Landry.

Don't think that it will function well without your support.

Kam K. Movassaghi, PE, earned his BS in 1963 from the University of Louisiana at Lafayette and his MS and PhD from Louisiana State University in 1965 and 1971 respectively. He is currently President of C.H. Fenstermaker & Associates, Inc. in Lafayette and President and CEO of Movassaghi Group, PEC, in Baton Rouge. Kam worked as an engineer in several engineering firms early in his career then joined the University of Louisiana at Lafayette faculty and ultimately served as head of its Department of Civil Engineering. In 1998 Kam was appointed by Governor Foster as the Secretary of the Louisiana DOTD where in his 6 years of service he led and facilitated a 78 percent increase in the rate of construction project lettings with no increase in annual revenues, and led the implementation of a comprehensive management plan to expedite the TIMED program — the largest highway construction program in the history of the Department. Kam and his wife Mazie have 2 children.

Paul A. Richards, PE, earned a PhD in civil engineering during his 21 years of military service as a civil engineer. During this time, he served 6 years on the faculty of the U.S. Air Force Academy, 2 years as Associate Dean of the School of Civil Engineering of the Air Force Institute of Technology and 2 years on the Tactical Air Command Inspector General Team. Paul was appointed to the faculty of the University of Southwestern Louisiana Civil Engineering Department in 1984 — the year he retired from the Air Force. During this time Paul served as Acting Head and Head of the Civil Engineering Department and Director of the Department's Center for Louisiana Inland Water Studies from 1989-2004. Paul and his wife Ann — married for 39 years at the time of her death in 2003 — have 2 children, Paul Jr. and Christine Marie, and 5 grandchildren. The most gratifying achievement in his practice was co-authoring of the text, *Unit Operations and Processes in Environmental Engineering,* adopted for use by civil engineering and chemical engineering faculties in their courses in many universities in the U.S. and abroad. Paul's advice to graduating civil engineering students is "Be professional in everything you do — at work, at play, in your relationships with others and in life in general — be professional." Paul plans to retire in December 2005 and work hard at playing golf, fishing, and traveling; and then for variety he plans to travel, play golf and fish; then fish, play golf and travel with his stated goal of "...improving my golf game, compete in amateur events, and hopefully qualify for a senior PGA tour event."

Leonce P. Waguespack, Jr., PE, earned his BS from Louisiana State University in 1963 and accepted employment with the Louisiana DOTD involved with the I-10 Bridge over the Industrial Canal. In 1964 he began employment with New Orleans Public Service Inc. — now Entergy New Orleans Inc. — in the Engineering Department as an Assistant Engineer. Leonce held many titles at Entergy working for many of its subsidiaries including Louisiana Power and Light Company, Entergy New Orleans Inc., and Entergy Gulf States Inc. He retired from Entergy Services Inc. in November 2004 after nearly 40 years of service specializing in the design and planning of gas distribution and transmission pipeline systems. Leonce served in the ASCE becoming President of the New Orleans Branch

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Paul Richards receives his Life Member certificate from President Landry.

Leonce Waguespack receives his Life Member certificate from President Landry.

Jeanne Arceneaux accepts her commemorative plaque for the Section's Outstanding Civil Engineering Senior Student award from President Landry.

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and of the Louisiana Section. He and his wife Linda are now enjoying retirement.

It was a pleasure to meet these distinguished engineers from around Louisiana who have contributed so greatly to our profession, learn of their personal experiences and appreciate their words of wisdom and encouragement to the graduating civil engineering seniors. Congratulations again to all of the Section's new Life Members.

The evening was also dedicated to acknowledging and celebrating the accomplishments of outstanding senior civil engineering students from the ASCE student chapters and civil engineering departments in the Section. *The Distinguished Civil Engineering Senior Student* awards were presented during the banquet by Jerome M. Klier, PE, Chair of the Section Student Awards and Activities Committee. The civil engineering department faculties of each university in the Section with a student chapter may nominate one graduating senior student for this honor. Klier presented each recipient present with a $100 award and a commemorative plaque acknowledging him/her as their respective university's *Distinguished Civil Engineering Senior Student*. These deserving students are

- Jeanne C. Arceneaux, Louisiana Tech University
- Shannon Chambers, Southern University
- Clayton R. Colmier, McNeese State University
- Eric J. Dallimore, University of New Orleans
- Bart D. Grasso, Tulane University
- Justin Charles Peltier, University of Louisiana at Lafayette and
- Anna Wheeler, Louisiana State University.

The Distinguished Civil Engineering Senior Student award recipients from their respective student chapters who received recognition and commemorative plaques are (from the left) Eric J. Dallimore, University of New Orleans; Jeanne C. Arceneaux, Louisiana Tech University; Shannon Chambers, Southern University; Bart D. Grasso, Tulane University; and Justin C. Peltier, University of Louisiana at Lafayette.

Jeanne C. Arceneaux was announced and recognized as the Louisiana Section's *Outstanding Civil Engineering Senior Student.* Arceneaux additionally was presented with a special plaque commemorating her award and she and the Louisiana Tech University ASCE Student Chapter each received a $250 cash award.

The last day of the conference began at 8:00 am with the opening of the exhibitors' display area followed by concurrent technical sessions starting at 8:30 am. The Section's Annual Spring Membership Meeting to elect officers was held prior to the scheduled luncheon that also featured our second keynote speaker, Section President Norma Jean Mattei. Her presentation was the Conference's Ethics seminar, titled *Engineering and Business Ethics: Is There A Difference?* Following Mattei's presentation, door prizes were raffled off to lucky winners after which the 2005 Annual Spring Meeting and Conference officially came to a close. Following the luncheon, the Section Board of Directors held its scheduled meeting.

— net surfing—

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

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

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

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

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

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

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

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

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

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

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

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

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

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building, a cruise terminal... I view civil engineering as a profession that easily lends itself to becoming a calling.

What if what it is you seek is true bliss and you are in the "career" mode? Are you doomed to average happiness? When I was an undergraduate engineering student in the late 1970s, I worked one summer at the U.S. Army Corps of Engineers New Orleans District office. One day I got into a conversation with an engineer who had been with the Corps for over 20 years. Since civil engineering was my planned future profession, I was curious to find out if he loved his work. He told me that what he really loved was dabbling in the stock market on the weekends. So I asked, why didn't he change careers? After thoughtful consideration he observed that he *liked* being an engineer but he *loved* playing the market. However, if he became a stockbroker, playing the market would not be so much fun. If engineering is not a calling, it can, as in this case, allow the monetary freedom to indulge in a hobby or other activity after work that may be a passionate commitment.

In the end, I conclude that happiness is a choice. It is the lens through which we choose to see the world. My hope for you is that your lens is — or will become — rose-colored!

This article is dedicated to the memory of **Greer Eugene Coursey**, PE, 2005 ASCE Life Member, Baton Rouge Branch.

Student Chapter News

SOUTHERN UNIVERSITY

By Kevin Cowan, Jr.

The Chapter enjoyed a busy semester beginning with its delegates attending the Zone II Workshop for Student Chapter Leaders in Orlando, Florida. We have held a few successful fund raisers and social events, participated in the Deep South Conference and will be hosting an Order of the Engineer Ring Ceremony April 27th.

Deep South Conference

The University of Louisiana at Lafayette could not have picked a better weekend to host the 2005 Deep South Conference. The weather was beautiful — not too hot and not too cold. The threat of rain held off so that the activities and competitions scheduled for outside venues were not compromised. As a result, all the participants were able to thoroughly enjoy the competition and other activities. It was disappointing that the water resources/environmental competition was cancelled, but we were still able to participate in two other events for which we were prepared to compete — the land surveying competition and the Daniel W. Mead paper contest.

Chapter member Phillip Salaam presented his Mead paper addressing computers and ethics. More specifically, he addressed whether or not engineers should use computers to solve problems that they cannot solve by hand. He contended that engineers using software in this manner violated the code of ethics because in doing so they place profit before people and jeopardize public safety, health and welfare by providing service in an area in which they are not competent.

UL Lafayette did an excellent job in hosting the conference this year; from the careful planning and organization of the events to the tasty crawfish. Everything was fantastic!

Member receives national recognition

In February, Past Chapter Vice President and current member Shannon Chambers was recognized as an Outstanding Young Leader in Technology during the Black Engineer of the Year Awards Conference in Baltimore, Maryland. As a part of this honor, she was featured in the March/April 2005 issue of *US Black Engineer & Information Technology* magazine. Shannon has received numerous honors, including the Civil and Environmental Engineering Department's Student Achievement Award for the student with the highest grade point average and the Southern University ASCE Student Chapter's Distinguished Civil Engineering Senior Student awarded by the Louisiana Section. Shannon is scheduled to graduate in May and she is planning to attend graduate school.

Shannon Chambers

Phillip Salaam presents his paper in the regional Daniel W. Mead paper contest as the judges observe his oral presentation.

Chapter members pictured near the University of Louisiana at Lafayette Student Union following the business meeting of the Deep South Conference are (from the left) Jacques Gilbert, Yvette P. Weatherton, PE (Faculty Advisor), Danielle Cooks and Kevin Cowan, Jr.

UNIVERSITY OF LOUISIANA AT LAFAYETTE

By Justin Peltier

The results of the competitions held during the Deep South Conference hosted April 7 - 9, 2005 in Lafayette by the University of Louisiana at Lafayette Student Chapter reflect the winning student chapters and the competitions:

- Tulane University - Concrete Canoe Competition
- Louisiana State University - Steel Bridge Competition
- Tulane University - Daniel W. Mead Paper Competition
- University of Memphis - Surveying Competition
- University of Memphis - Asphalt Pigeons Competition

The teams from the winning student chapters of the concrete canoe and steel bridge competition, and the individual from the winning student chapter of the Mead paper competition qualify to compete in the respective national competitions scheduled later in the year.

TULANE
By Joe Simpson

Recent Activities

The Chapter's intramural sports team, *Strike Force,* has been "rollin' on" and "lightin' it up" again this semester both on the basketball court and on the soccer field posting undefeated regular seasons in both sports. Both teams qualify for the playoffs in their respective sports and they contribute to the Chapter's aim to claim its 1st ever *Reily Cup.* Also, the Engineering Student Council hosted the 1st annual *Elympics* this year pitting the various engineering departments on campus against each other in several athletic competitions. Coming out on top, as expected, was the civil engineering department.

The Chapter's Mardi Gras celebrations were well represented with 20 plus members in attendance for the various parades. Also, the Chapter had a St. Patrick's Day party and it plans to traditionally close out the academic year with the annual *End of the Year Party* on April 29 on the Mississippi River. The next Chapter membership meeting scheduled is the Chapter's annual meeting with the election of officers on the agenda. The guest speaker will be Deborah D. Keller, PE, President of the New Orleans Branch of the ASCE Louisiana Section.

2005 Deep South Conference

The Chapter enthusiastically anticipated this year's Conference in Lafayette. Many long hours went into the design and construction of the competition steel bridge and concrete canoe. There was a record number of members preparing for the Conference and the Chapter continually strives to increase participation each year to more effectively compete in every event. The Chapter considers its performance this year as outstanding. Senior student **Steve Shira** received the top award for the Daniel W. Meade Paper contest. The steel bridge team, headed by **Ben D'Arensbourg**, had fastest construction time and drew the largest crowd for assembly and loading, despite its lack of experience in design, fabrication, and the timed building effort. Unfortunately, due to a tragic pre-assembly event, the competition steel bridge was disqualified for exceeding maximum vertical deflection under load.

The Chapter returned to the surveying competition again this year with a team of 3 sophomores who had a great time and learned a lot. The highlight of the Conference for the Chapter, however, was the concrete canoe competition. It was the Chapter's first-ever regional victory in this competition. The concrete canoe competition team is anxiously looking forward to participating in the national competition June 25-27 hosted by Clemson University. *T Boat* and "The Smaller the School the Better the Boat" will be a staple in the fabric of Chapter's organization in the future. The Chair of the concrete canoe committee, Bart Grasso, wishes to thank the concrete canoe team: **Joel Dixon, Reilly Thompson, Jenna Addis, Kristin Moan, Bridget Kelly, Josh Moore,** and **Courtney Miller;** and the team's corporate consultant Bennet & Associates. Those wishing to provide any monetary donations to assist in covering the team's costs to participate in the national competition please inquire at asce@tulane.edu or at bgrasso@tulane.edu. All donations will be greatly appreciated.

Tulane Student Chapter steel bridge competition team confers during the competition.

LSU
By Garrett Sutley

The Chapter competed and managed to do well in the steel bridge and concrete canoe competitions held in conjunction with the Deep South Conference in Lafayette. The thoughtful organization of the Conference events and the efforts of the host chapter, the University of Louisiana at Lafayette Student Chapter, to keep the conference on schedule and an outstanding experience for all the participants was greatly appreciated. The Chapter placed 1st overall in the steel bridge competition by placing

- 1st in economy
- 1st in lightness
- 1st in efficiency
- 1st in construction speed
- 2nd in stiffness
- 2nd in aesthetics

The Chapter managed an overall 3rd place finish in the concrete canoe competition by placing

- 1st for design paper
- 1st in the women's sprint race
- 2nd in the men's sprint race
- 2nd in the coed sprint race

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tice, *RP 2SIM - Structural Integrity Management*. The seminar attracted 70 engineers, mostly from the offshore industry.

There are 4 seminars currently scheduled for the remainder of the calendar year. All will be held on the University of New Orleans campus. Those who attend will receive a certificate for 2 PDHs for each seminar they attend. The seminars are as follows:

- May 10, 2005 Annual David Hunter Lecture: *Architecture's dream is an engineering nightmare — Solutions to gravity defying architecture,* by Jon Magnusson, PE.
- June 2, 2005 *Advances in precast concrete structures — details and assembly,* by Alvin Ericson.
- August 16, 2005, *Wind design seminar* by Marc Levitan, Director of LSU Hurricane Center.
- October 13, 2005 Offshore seminar, topic and speakers to be announced.

Information for all Structures Committee seminars scheduled is maintained and updated on the New Orleans Branch website www.asceno.org.

Norma Jean Mattei, PE, will once again direct the effort to foster awareness of civil engineering in young students by sponsoring a hands-on exhibit at this year's New Orleans Jazz Fest. Materials for the *Box City* project were partially provided by funding from the national ASCE.

The committee has also received funding from the national ASCE to continue its efforts to promote civil engineering in some form of public announcement. Last year, the New Orleans Branch partnered with its Structures Committee to produce a television commercial. Methods discussed this year range from extending the TV commercial to renting billboard space. The advertisement may be used to publicize upcoming ASCE events planned in the New Orleans area.

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bers simply preferred the paper version in the mail. The Branch has since returned to publishing the paper version by mail. At the inception of the Branch website in 2002, a *Newsletter* page was created to publish the current issue and archive past issues.

The *Shreveport Branch* has not considered an e-newsletter. It enjoys a very good relationship with a local printer that takes care of the printing, folding, addressing and mailing of its newsletter for a reasonable price plus the postage, minimizing the cost and effort to the Branch. This year the Branch started a modest email reminder and RSVP for general membership meetings. It only states the who, what, when and where and requests a reply from those planning to attend.

Highlights of the November Board of Directors meeting

Some decisions concerning the Section website have been made. The website development and the webmaster will be provided through Gator-T and the website host will be Crystal Tech. With some relief it was noted that the contents of the previous website were preserved and can be incorporated onto the new website when it is activated.

It was mentioned that one *benefit* of the new ASCE Regional alignment anticipated will be the replacement of the Zone leadership conferences with a series of alternating 2-region conferences. The 2 regions participating in each conference from year-to-year will be different with the intention of cycling through all of the permutations. This will give the leadership of each region the opportunity to network with the leadership in all of the other regions over time.

A photography contest was proposed and it is being further considered for implementation. It will be limited to images of the civil engineered infrastructure in Louisiana. The participation will be limited to high school students. The winning photographs and those of honorable mention will be compiled to produce a calendar for sale by the ASCE student chapters as a fundraiser.

The New Orleans Branch is making an administrative revision in the operation and financing of its normal hosting duties for the Section Annual Meeting in New Orleans. The Section Annual Meeting has long been hosted by the Branch in conjunction with the Louisiana Civil Engineering Conference and Show that it now cosponsors with the Louisiana Chapter of the American Concrete Institute. Since the ACI joint sponsorship and the trend toward a large difference in those who attend the two events — the Conference and the Annual Meeting — merging their registration on the same form has become difficult. Accounting the revenues collected in fees for both events and then disbursing these revenues between the Branch and the ACI Louisiana Chapter has become difficult to administer. For this reason, the registration forms and the revenues and expenses of the two events will be accounted and managed separately by the Branch.

The Shreveport Branch is investigating the feasibility and member interest in annually holding one of its regular membership meetings in Ruston. Its purpose is to make participation in Branch activities and professional development seminars more available to the ASCE members and other civil engineers resident in the Ruston-Monroe region.

The District 14 Council is currently chaired by a Louisiana delegate, Timothy M. Ruppert, PE, and operated in conjunction with — and in support of — the District 14 Director who is currently Steven C. McCutcheon, PE, of the Georgia Section. The progress toward District 14 merging with District 10 — also the Florida Section — to form the new proposed region appears to be moving rapidly forward and may be completed in effect well ahead of the scheduled time line.

The infrastructure report card as it may be successfully implemented in the Louisiana Section was discussed. To successfully accomplish its purpose, the infrastructure report card must not be viewed as a political document but as an effective communication tool. The participation and review of state and local governments should be sought. There would appear to be opportunities for workshops to enhance the content and quality of the report card.

The past sporadic and limited participation of the branches to recognize the outstanding members in their communities in a parallel awards program with the Section and to advance them for consideration in the Section awards program was noted. The branches were asked to consider making more of an effort to make the branch level awards to their outstanding members and submit their candidates to the Section for consideration as the Section award recipients.

District 14 Council News

A meeting of the Region 5 Formation Team was planned as part of the March 2005 District 14 Council meeting. However, due to the inability of key R5FT members to attend, the meeting had to be postponed. The R5FT did have a conference call meeting early in March to form committees to write the Region 5 bylaws and begin planning. The next R5FT meeting is being planned and scheduled for either April or May. James C. Webb. PE, is the Louisiana Section representative to the R5FT.

As it can be observed from the accompanying map, two current districts — District 10 and District 14 — will be combined to make up the new Region 5. District 14 covers a larger area than District 10 — the Florida Section — and it contains 4 sections including the Louisiana Section and it contains a total of 7014 members. District 10 — the Florida Section — though smaller in area contains a total of 7399 members. These demographics are expected to affect the outcome of the R5FT negotiations covering representation and governance in the new Region 5. The 5 sections and their total membership in District 10 and District 14 that will remain intact to form Region 5 are:

District 14:

- Louisiana 1903
- Alabama 1723
- Georgia 2571
- Mississippi 817

Total 7014

District 10:

- Florida 7399

If you are interested in the political realignment of the sections that will reorganize the political structure of the ASCE from 15 districts and 4 zones to 10 regions, both maps can be found on the ASCE website at www.asce.org/files/pdf/governance/uszonesregionssections.pdf.

The District 14 Council currently has a balance of $1380 in revenue that is budgeted entirely to cover the travel expenses of the District 14 Director and the Council's Secretary-Treasurer.

Steven C. McCutcheon, PE, District 14 Director, reported on the State Public Affairs Grant program administered by the national ASCE. He noted a major shift in the national ASCE view of — and policy for — the use of SPAG funds. They are now only intended to provide funds to *start* new programs and not to sustain existing programs that have previously received SPAG funding. The section or branch submitting a proposed program for SPAG funding is expected to independently sustain the program if it is to be continued into future years. As a result, several sections and branches discovered that their ongoing programs that had been previously funded from year-to-year with SPAG funds were not approved in the last funding cycle.

It was reported that the national ASCE ended the 2005 fiscal year with a surplus of approximately $5 million of which the bulk will be placed in the ASCE reserve fund. With these funds added to the ASCE reserve fund, it is expected to reach approximately 26 percent of the annual operating budget. The reserve fund has been below 25 percent of the annual operation budgets in recent years though its desired amount is between 25 and 50 percent of the annual operating budget.

The ASCE Finance Committee is developing the national ASCE budget for the 2006 Fiscal Year and it is considering either a $5 increase in annual dues or no increase in annual dues using a portion of the surplus to balance the FY '06 budget. The District 14 Council passed a resolution recommending no dues increase and using a modest portion of the surplus funds to balance the operating budget.

- Career Benchmarks -

Section members **Samuel D. Amoroso,** PE, **Thomas A. Cancienne, III,** PE, **Stephen M. Chandler,** PE, **Travis A. Fox,** PE, **Timothy F. Gaines,** PE, **Michael J. Lanclos,** PE, **Chien B. Ly,** PE, **Jason P. Phillips,** PE, **Russell J. Rome, Jr.,** PE, **Daniel L. Rosenquist,** PE, **Shaun R. Simon,** PE, **Jarrod C. Tramonte,** PE, **Jeffrey D. Wilson,** PE, recently earned their civil and/or environmental engineering license in Louisiana. If you are in contact with any of them, please offer them your congratulations on their accomplishment.

Louisiana residents **Christopher A. Arts,** PE, **Kiley F. Bates,** PE, **Jacquelyn M. Baumann,** PE, **Todd E. Baumann,** PE, **David C. Besselman,** PE, **Jennifer D. Branton,** PE, **Brandon S. Breaux,** PE, **Andree F. Cortez,** PE, **Rados B. Croom,** PE, **Staci L. Danna,** PE, **Dennis J. Dean,** PE, **Joffrey E. Easley,** PE, **Kenneth R. Ferachi, Jr.,** PE, **Rhonda S. Fetters,** PE, **Kimberly A. Fitzgerald,** PE, **John E. Guidry,** PE, **Robert B. Harrell,** PE, **James B. Heaslip, II,** PE, **William S. Huffstetler,** PE, **Traci L. Johnson,** PE, **Heather R. Klingman,** PE, **Scott M. Lobell,** PE, **Kimberly M. Martin,** PE, **Edward H. Miessner,** PE, **Jinyoung Park,** PE, **Christopher L. Rogers,** PE, **Clarence J. Savoie, III,** PE, **Scott M. Schoolmeyer,** PE, **Michael L. Smith,** PE, **Scott C. Sollay,** PE, **Chad M. Stevens,** PE, **Kathryn M. Thibodeaux,** PE, **Robert F. Vinet,** PE, **Lisa D. Wadsworth,** PE, **Gordon L. Walters, Jr.,** PE, **Clinton S. Willson,** PE, **Amber L. Wooten,** PE, recently earned their civil and/or environmental engineering license in Louisiana and are not members of the ASCE. A copy of this issue of the journal is sent to them as an informal introduction to the Section. If they wish to join and/or find out more about the ASCE, they are hereby encouraged to visit the ASCE national website, http://www.asce.org. If you are in contact with any of these engineers, please consider formally introducing them to the Section by inviting them to attend a branch meeting as your guest.

Section members **J. Alvin Badeaux, Jr.,** PE, **Greer E. Coursey,** PE, **Arthur A. DeFraites,** PE, **Dennis W. Godso,** PE, **Morris R. Heinzen, William H. Hidalgo,** PE, **Lloyd G. Hoover,** PE, **Kam K. Movassaghi,** PE, **Gordon M. Naquin,** PE, **Robert A. Neef, James C. Porter,** PE, **Paul A. Richards,** PE, **Donald F. Sorgenfrei,** PE, **Leonce P. Waguespack, Jr.,** PE, **Earl W. Wardlaw, Jr.,** PE, **Thomas R. Wartelle,** and **Carroll G. Westbrook,** PE recently attained the ASCE membership grade of Life Member.

Bo Walters

Ehab Meselhe

C.H. Fenstermaker and Associates announces the appointment **L.G. "Bo" Walters** as manager of its business development division to expand its business in its oil and gas and government services. He will work to refine and enhance the marketing and sales focus, to expand business through strategic long-term relationships with current and future clients, and to strengthen professional relationships with the departments of transportation and natural resources in several states.

Providing consulting services at Fenstermaker since 2003, Walters, a graduate of the University of Houston in Electrical Engineering, has over 25 years of experience. His experience includes defining market requirements and coordinating efforts with the U.S. Army Corps of Engineers, the Department of the Interior, and the Texas General Land Office prior to which he worked in sales and marketing for and with major corporations serving the pipeline, electrical transmission, shipbuilding, architectural/engineering and construction industries. Early in his career Walters served as a lead engineer and project manager for the design and manufacture of products in the pipeline and airline industries.

Ehab Meselhe, PE, received the *Coastal Stewardship Award* during the 10th annual Coastal Stewardship Awards Banquet. Meselhe is the Director of the Center for Louisiana Inland Water Studies and an Associate Professor in the Civil Engineering Department at the University of Louisiana at Lafayette and the Assistant Engineering Division Manager at C. H. Fenstermaker & Associates, Inc. playing a key role in the firm's coastal restoration and modeling efforts.

Editor's note: There are three disciplines that are licensed by the Louisiana Professional Engineering and Land Surveying Board and that may be considered closely related to civil engineering. They are the environmental, structural and architectural engineering disciplines. As of January 2005, the active engineering licenses conferred by the Board were approximately 6128 in civil, 746 in environmental, 51 in structural and 1 in architectural.

- Observation -

Environment:

The answer to the rhetorical question, How did a roadside ditch get to be part of the "waters of the United States?" is, *A ditch is a federal waterway whenever the U.S. Court of Appeals says it is...* according to columnist James Kilpatrick on the op-ed page of the Baton Rouge *Saturday* 1/3/04. He reports:

> *On June 12 the court asserted federal authority over a ditch (3 feet wide) along a two-lane country road near Parsonsburg, Md... It trickles into a culvert, thence to another drainage ditch, thence through five culverts, three ponds and five dams to the Wicomico River... (It was) found... sufficient that sediment created by the ditching "potentially" could reach navigable water eight miles away.*
>
> *On September 10 the court similarly asserted authority over a tract of land in Newport News, Va... (where) the waterway in question is a spur ditch, leading to a drainage ditch, leading to a culvert, traveling to another drainage ditch, reaching the Western Arm of Stony Run, which is defined as "not navigable-in-fact"... (It) intersects the Central Arm of Stony Run at a point where surface water may intermittently enter the Western Arm. Stony Run eventually flows into the Warwick River, which intersects with the James River, which flows into Chesapeake Bay... The notion that the Clean Water Act of 1972 covers every leaky hose in the United States is an absurdity...*
>
> *To the argument... that a ditch is not a tributary... (it is) asserted that the word "tributaries means what the Corps says it means." Beats reliance on dictionaries...*
>
> *When a 3-foot ditch gets the respect accorded the Mississippi River, we have floated into a Wonderland indeed.*

I must share Kilpartick's sense of derision concerning how the interpretation the 1972 law has evolved in the activist courts into something probably its writers never envisioned or intended. When will it get to the point, if it hasn't already, that we are hugging trees so tightly that we strangle our development and economy into jobless growth, regression or depression. - Editor

Engineers Without Borders: Louisiana connection

By Leah Lemoin

When it comes to engineering, volunteerism has no borders. Engineering students from Louisiana State University are demonstrating this while they dedicate their time and effort to design and build a water supply system to provide the village of Nyamilu, Kenya with clean and reliable water year-round.

The Engineers Without Borders LSU Student Chapter was chartered in the Fall of 2004. Engineers Without Borders is a humanitarian non-governmental organization. Through its student chapters, it gives student members the opportunity to apply engineering skills through hands-on projects that benefit people in developing areas. "One of the most important purposes is working in conjunction with developing countries and training a new generation of globally aware engineers," states Andrea Stancliff, Vice President of EWB-USA's West Coast Professional Partners.

EWB-USA seeks out projects that involve the conceptual, design, implementation, and monitoring phases typical of engineering projects. Many of these projects are ongoing and may span several years. Projects are conducted by groups of students under the direction of university EWB-USA chapter faculty members and professional engineers from partnering engineering firms. EWB-USA projects focus on water, wastewater, sanitation, and energy.

Projects are initiated by — and completed with — contributions from the receiving community that is trained in the process to independently operate the systems provided. EWB-USA attempts to reasonably ensure that its projects are appropriate and self-sustaining in scale and complexity. A recent accomplishment of EWB-USA was in Mali. Students from Colorado University — Boulder teamed up with engineers on a Mali assistance project to

- repair a water pump
- coordinate the drilling of deeper wells
- construct a soil cement-lined water storage basin and
- build a pilot drip irrigation system for a community garden in the village of Foutaka Zambougou.

EWB-LSU is collaborating with EWB-Dartmouth in the construction of a water supply system in Nyamilu. It is a village of 10,000 people in scattered homesteads and located in the southwest corner of Kenya. Villagers currently collect water from rain and streams for drinking, cooking, and washing. As a result, rampant outbreaks of waterborne diseases such as cholera, typhoid, dysentery, and diarrhea are common. Using rainwater that is sparse, the villagers grow vegetables to sell. The only well in the village is shallow and it dries up during the dry seasons. Our goals for the project are to

- supply clean drinking water to the community
- use sustainable and appropriate technology and
- give the community input into the design and a sense of ownership.

Students from Dartmouth will travel in June to install a solar-powered pump in the existing 50' well. The LSU students will travel in August to install a water storage tank and piping from the tank to five distribution points in the town. The villagers will be trained in the operation and maintenance of the technology to reasonably assure they will be able to sustain the system once the EWB volunteers leave.

The project is anticipated to have many positive impacts on the community of Nyamilu. The project will bring the community together during the implementation and cultural values will be shared between the villagers and students. The community will be able to plant and grow more trees that will reduce wind and soil erosion. The time now spent by the women in the community looking for water can be used for business and farming. The rampant waterborne diseases should be controlled, allowing resources previously spent on hospitalization and medicine to be used for food and education. Members of the community will better learn how to survive with minimum external intervention.

The EWB-LSU Student Chapter is presently finalizing the design and raising funds. The Chapter continuously seeks the expert services of professional engineers and the sponsorship of companies willing to help cover the expenses. If you are interested in this effort, the Chapter would welcome your support, please contact ewb@lsu.edu. For more information visit www.ewb-lsu.org or www.ewb-usa.org.

Editor's note: The ASCE and Engineers Without Borders executed an agreement to establish a relationship to more effectively provide assistance with the engineering needs for developing areas worldwide. This is to be provided through the involvement and training of engineers and engineering students in the projects facilitated by EWB-USA. The execution of these projects sends engineering students into developing countries to work on civil engineering projects under the supervision of professionals and provides the students with hands-on training in the process. The ASCE does not provide the opportunity for its members to work in developing countries. The memorandum of understanding signed February 27, 2005, gives the ASCE, through its association with EWB-USA and its participating members, the opportunity to become more actively involved as good-citizen engineers around the world. The ASCE does bring two important assets to the table, access to its vast network of civil engineering department heads and student chapters, and a vast reservoir of talented professional engineers willing to mentor students in the classroom and in the field. The agreement brings together these two organizations with common goals and objectives in a way that each can fill significant holes in the other's needs.

YMC project advances

By Yvette P. Weatherton, PE

The Younger Member Committee chairs of the Baton Rouge, New Orleans and Shreveport Branches, and the Section have a mutual plan under way to organize and conduct a statewide photography contest. Participation in the contest will be extended to high school and college students in Louisiana who will be invited to submit amateur photographs that depict positive images of civil engineering throughout the state. Southern University will host a website and an email address for contest entries to be submitted for consideration. The web and email addresses will be publicized with the guidelines for the contest at a later date.

The top 12 photographs judged to best depict positive images of civil engineering will be selected and the photographers submitting them will each receive $100. These 12 photographs will be distributed for sale to engineers throughout the state incorporated in a full-color calendar. The proceeds will be used to fund the student chapters and YMC activities.

Professional photographers and retired engineers are being asked to serve as judges. Corporate sponsorship is also needed to fund the prizes and defray the anticipated printing costs of the calendars. Anyone who is interested in sponsoring this project should contact Yvette P. Weatherton, PE by email at weatherton@engr.subr.edu or by telephone at (225)771-5870.

Did you know…

...that a recent Harris poll indicated that over half of the U.S. public did not know what engineers are or what they do and further most engineering works were not perceived or acknowledged? It is conjectured that the environmental problems publicized in the recent past that are attributable to engineering works were ascribed to the engineering profession by the public promoting its negative public image. The Rx: a massive public relations ad recruitment effort. - *EEE Spectrum* 10/04

Technical committee activity

The Section was recently advised that there are numerous Section members who serve on ASCE national technical committees, and the following listing was sent identifying these members, their contact information and their respective committee assignments. This information is provided in the event that you may have a particular interest in the work and/or the activities of any of these technical committees and wish to use a Section member contact to facilitate your particular interest.

Branch and Section technical committee personnel should also take note of these national technical committees and their members in the Section for any parallel committee interests or pursuits that may be of mutual value if pursued through these individuals. For brevity, the ASCE code or abbreviation is provided for the ASCE committee or institute under which each technical committee listed is organized and operated. The ASCE *Official Register* (available on-line) provides a full listing of the institutes and committees, and the technical committees including their mission, scope and personnel.

Name	Email	Technical Committee	Com/Inst Code
Hadi Shirazi	hshirazi@dotd.louisiana.gov	Bituminous Materials	CI
Freddy Roberts	froberts@coes.latech.edu	Bituminous Materials	CI
Louay Mohammad	louay@lsu.edu	Bituminous Materials	CI
Domingo Elguezabal	cqminc@bellsouth.net	Construction Quality Management and Inspection	CI
Oliver Delery	oliver.delery@hansonamerica.com	Direct Design Of Buried Concrete Pipe Box Sections Stds.	CI
Ray Rials	rfrials@aol.com	Specifications	CI
Jeffry Mazzanti	jmazzanti@lanier-engineers.com	Ports And Harbors Committee	COPRI
Kong Wong	sdkwong@prodigy.net	Ports And Harbors Committee	COPRI
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Ehab Meselhe	meselhe@louisiana.edu	Computational Hydraulics	EWRI
Ehab Meselhe	meselhe@louisiana.edu	Computational Modeling Of Hydraulic Structures	EWRI
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Vijay Singh	cesing@lsu.edu	Et In Irrigation And Hydrology	EWRI
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Vijay Singh	cesing@lsu.edu	On-Farm Irrigation	EWRI
Daniel Thomas	thomasdl@bae.lsu.edu	On-Farm Irrigation	EWRI
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Chunsheng	cscai@lsu.edu	Dynamics	TGEM
Chunsheng Cai	cscai@lsu.edu	Experimental Analysis & Instrumentation	TGEM
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Robert Anderson	rbaeng@bellsouth.net	Forensic Practices Committee	TIFE
Joe Richard	jgr2@cox.net	Pipeline Planning & Design	TOPL

TEA-LU: It's now or never

By Deborah Ducote Keller, PE

It's great to be a civil engineer! It seems every time one attends an ASCE function with national president William P. Henry, PE, present he begins by addressing the audience of civil engineers with this signature opening line to energize the crowd. The March gathering in Washington, D.C. for the ASCE's *2005 Policy Week* was no exception. Over 100 ASCE members representing their respective states converged on the capitol with 20 members of the National Society of Professional Engineers for a day of leadership training in government relations. This training was in preparation for the following day of pre-arranged visits between the engineers and their congressional delegations to discuss the dire need for federal funding for America's infrastructure.

The highlight of the week was the public release of the ASCE *2005 Report Card for America's Infrastructure* on March 9th. Sad to say, this year's report card with a D average was even more dismal when compared with the previous report card in 2001 with its D+ average. Others attending the ASCE's *2005 Policy Week* from Louisiana were ASCE members Shannon S. Spell, PE, Marc Levitan, and Bobby E. Price, PE, who is also the national President of the NSPE.

The leadership training sessions that were conducted focused on the nation's declining infrastructure and more particularly the effect of the 2003 expiration of the $218 billion TEA-21 legislation which was kept alive by the Congress through short-term extensions. A new transportation trust fund bill should have been authorized upon its expiration, but it became the victim of election year political posturing. Authorization of the new transportation trust fund bill for 2005 referred to as the Transportation Equity Act: A Legacy for Users (TEA-LU), will be the key to funding approximately $284 billion in transportation projects over the next 6-year period. The exact amount to be budgeted is still under debate. While Congress and the President review the revenue projections for the Highway Trust Fund, as estimated by the Congressional Budget Office, the states are marking time with many projects held in limbo until the new legislation is passed.

If projecting the tax revenues generated by the sale of gasoline is not complicated enough, the debate over what minimum percentage should be returned to the *donor* states rages on. The TEA-21 stipulated that every state — particularly the donor states — would receive at least 90.5 percent of the fuel tax paid from its gasoline sales. However, the donor states that contribute a higher share of fuel tax to the trust fund monies than is returned to them are hoping to up their minimum share to between 92 and 95 percent. One quickly learns that in Washington, the *haves* and the *have nots* are referred to as the *donee* — recipient — and *donor* states. Louisiana has historically been a donor state.

I was fortunate to be able to witness the actual voting process the evening of March 9 when the House of Representatives passed TEA-LU. There are over 4,000 *special projects* in the bill of which 1,000 or so were added in the final hours of debate before its passage. One of these special projects is Louisiana's I-49 project that will require a 20 percent state match for every federal dollar received. This could prove a considerable challenge for the state given the demands within its own budget priorities once the federal dollars start flowing again.

Infrastructure funding that is competing with TEA-LU in the President's proposed budget is the Environmental Protection Agency's *Clean Water* state revolving fund program, the U.S. Army Corps of Engineers' civil works budget, and the Dam Rehabilitation and Repair Act. These are all areas of great concern to civil engineers. During the training session we were told that the next hurdle for TEA-LU is Senate pas-

(Continued on Page 23)

Investing for income? Consider long-term dividend-paying stocks

By Thomas R. Thurmond

Q *I am more interested in investing for income over the long term rather than in participating in the daily ups and downs of the stock market. What would be a good investment strategy for me?*

A One choice for income seekers may be quality, long-term dividend-paying stocks. Many name brand companies have not only paid dividends consistently since the early 1900s — in some cases they have also steadily raised their dividends.

Q *What makes these stocks attractive to long-term investors?*

A Consistent dividend growth stocks may be attractive for long-term investors who can hold the stocks as dividend payments rise. Although the stocks' current yields may not seem competitive at first, growth in dividend payments can significantly increase the yield on an original investment.

Q *Why is dividend growth so important?*

A An investor seeking income could purchase conservative fixed-income investments, such as Treasury bonds. In fact, every well-balanced portfolio should contain such investments. However, without the power of dividend growth, inflation will take its bite, and these investors may end up losing ground to inflation over time.

Q *What should I look for in a quality stock?*

A Consider 3 factors that can help limit your risk and keep your income growing when you are looking for income among stocks:

- A low payout ratio gives the dividend room to grow. The payout ratio is the percentage of a company's earnings per share paid out as dividends in the current year. The lower the ratio, the more room for potentially boosting the dividend. Remember, for a leading company to retain its leadership position, it will have to channel a good portion of its earnings toward growth. Thus, payout ratios may be lower for these stocks than they are for electric utilities or other companies in slow-growth industries.
- Capital appreciation potential can enhance returns. Regardless of whether or not they receive a dividend, most investors buy a stock hoping its share price will rise. Consider how the value of your investment would increase if, in addition to annual dividend increases, the company's stock price also rose, for example, in line with the S&P 500 average.
- Dividend payment history can provide clues about the future. Although past performance does not guarantee future results, a company with an unbroken record of paying dividends for 30-plus years would seem to be reliable for income. A history of growth in the dividend is equally important.

However you choose your income stocks, the key is holding them for the long term, which means that daily and monthly price swings may not be as important. Remember that time in the market, not timing the market, is most important to investment success. If you would like more information please feel free to contact the writer.

Thomas R. Thurmond, Senior Vice President, Financial Advisor with Morgan Stanley in New Orleans, Louisiana. He may be contacted by e-mail at thomas.thurmond@morganstanley.com or by telephone at (504)587-9669 or (800)659-0009.

Science and engineering: Only Einsteins need apply?

By Deborah Ducote Keller, PE

I knew when I entered the College of Engineering in 1975 that few women had gone before me. My mother pointed out, there were no ads in the newspaper's *Help Wanted Female* column for engineers. For you post-baby boomers — yes — classified employment ads were once segregated by gender. Yet, I was not deterred. It was probably because this was a time when women were expected to do the unconventional. After all, it was the 1970s.

In my 26-year career as a practicing civil engineer in both the private and public sectors, I have had my fair share of funny and not-so-funny experiences with prejudice, discrimination, and stereotyping that many of us encounter. From my experience, however, there is one haven where I can certainly attest that neither gender, race, creed, nor color have anything to do with one's ability to participate, be heard, volunteer, or serve. It is in the ASCE.

This has not gone unnoticed on the national level of the ASCE. I am often asked how it is that the Louisiana Section has so many women in its elected leadership at the Section and branch levels. I reply that there is so much to be done and the gratification from the resulting activities is so rewarding that we members are really too busy to notice our differences because of the larger issues. I believe that we simply share a strong common bond of being civil engineers first.

That said, I hope you were as taken aback as I was recently by the remarks this past January made by Harvard President Laurence Summers as the speaker during a luncheon for a seminar on diversifying the science and engineering workforce. Summers suggested that *innate differences* may account for the gender gap in employment. His controversial remarks made headlines in the national media and triggered a formal response by nearly 100 leaders in science and engineering academics, technical organizations, and industry, that is re-printed here. I am pleased that the coverage in *Business Week* included a sidebar story that featured Patricia Galloway, the ASCE Past President. It highlighted her career achievements and experiences as a woman engineer.

I feel well-qualified to state my belief that there are differences between men and women engineers, just as one could find differences between a Yankee engineer and a Southern engineer. My brain is wired distinctly differently from that of my spouse's. Like so many engineer-couples, I see the subtle differences in how we problem-solve and the non-technical skills we bring to a solution due to what would appear to be genetic differences. *Advice:* Unless you are an engineer, do not go on vacation with engineer-couples. The organization and the efficiency can otherwise overwhelm the non-engineer.

I often tell students that my career was propelled not by my technical abilities as much as it was by my ability to communicate. This, I believe, is because our profession is full of the technical genius that typically resides in the left side of the brain where spatial and mathematical cognitive abilities are supposedly more dominant in men due to genetics, according to the experts. However, when my technical knowledge was honed through my engineering education, it met up squarely with the dominant right side of my brain where the same experts suggest that language and communication abilities are more dominant in women due to genetics. Therefore, with so few women in engineering, it is logical that the engineer who can more easily absorb complex technical information and translate it for non-engineers, confidently make presentations and speeches, and write reports, studies, and even articles for a journal such as this, will be particularly valued, regardless of gender.

...my career was propelled not by my technical abilities as much as it was by my ability to communicate.

Summers was voicing his own opinion as to why there are not more women in science and engineering. He concluded it is genetics. As an experienced woman engineer and the mother of a woman freshman engineering student, I can aver from my perspective that it is *not* genetics as Summers opined. I have observed over my career gifted and not-so-gifted students graduate and become practicing engineers. The difference, in my opinion, is the guidance and the mentoring received by — and the support systems available to — the students that give them direction relative to what can be achieved.

Nobody told me that I could not be an engineer when I was growing up. It may have been because nobody thought to ask a little girl in the 1960s what she wanted to be in the first place. Although the universities do have slightly more women enrolled than men, one fact is clear, many women students are opting for an education in professions such as medicine and law that are financially more lucrative than science and engineering. This may explain in part the low number of women students in the science and engineering curricula.

If we want to see more diversity in our profession, we need to continue our outreach programs by participating in career days, judging science fairs, letting students job-shadow us, mentoring students, employing student interns, and volunteering in the schools from kindergarten through college. The ASCE branches are often contacted by guidance counselors and teachers begging for engineers to participate in

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Response to Dr. Laurence Summers January 18, 2005

Last Friday, Dr. Lawrence Summers, President of Harvard University and an economist, spoke before a meeting of the National Bureau of Economic Research, about the causes for women's underrepresentation in science. He suggested that, since fewer girls than boys have top scores on science and math tests in late high school, perhaps genetic, rather than social, differences explain why so few women are successful in these fields.

We would like to respond:

Well-accepted, path-breaking research on learning (see, for example, Bransford, et al., "How People Learn," and Claude Steele's work on "stereotype threat") shows that expectations heavily influence performance, particularly on tests. If society, institutions, teachers, and leaders like President Summers, expect (overtly or subconsciously) that girls and women will not perform as well as boys and men, there is a good chance many will not perform as well. At the same time, there is little evidence that those scoring at the very top of the range in standardized tests are likely to have more successful careers in the sciences. Too many other factors are involved. Finally, well-documented evidence demonstrates women's efforts and achievements are not valued, recognized and rewarded to the same extent as those of their male counterparts (see, for example, Virginia Valian's work on gender schema).

As leaders in science, engineering, and education, we are concerned with the suggestion that the status quo for women in science and engineering may be natural, inevitable, and unrelated to social factors. Counter-examples to this suggestion are drawn quickly from the fields of law, and of medical science. In 1970, women represented just 5 percent of law students and 8 percent of medical school students. These low percentages have increased substantially in response to social changes and concerted institutional and individual effort. Obviously, the low rates of participation in 1970 were indicative of social, and not genetic, barriers to success.

We must continue to address the multitude of small and subtle ways in which people of all kinds are discouraged from pursuing interest in scientific and technical fields. Society benefits most when we take full advantage of the scientific and technical talent among us. It is time to create a broader awareness of those proven and effective means, including institutional policies and practices, which enable women and other underrepresented groups to step beyond the historical barriers in science and engineering.

Editor's Journal

By James C. Porter

Progressive Collapse

Recent interest and discussion about progressive collapse of structural systems and the subject in general gives me reason to be curious about how progressive collapse may be technically defined and characterized. Without researching previous discussions of the issue in any detail, my best guess is that progressive collapse can be conceptually defined as the total or partial collapse of one or more components of a structural system precipitated by the failure of another component. The mechanism of the progressive collapse of a structural system may be characterized by the lack of a *fail-safe* feature.

Fail-safe describes a feature incorporated to automatically counteract the effect of an anticipated mode of failure. The effect to be counteracted here is progressive collapse. The fail-safe concept applied to the progressive collapse of one or more components of a structural system may be characterized by two concepts — redundancy and equilibrium — as they may apply to the structural system. These two concepts are typically covered — if not rigorously — conceptually and briefly in the first chapters of some elementary structures texts.

Fail-safe features in a structural system intended to prevent progressive collapse may be accomplished by structural *redundancy,* for example. In the event of an anticipated component failure, redundancy may be accomplished by either the redistribution of the stresses in the failed support path or the redirection of the stresses into one or multiple alternate support paths to carry the load.

The redundant capability to redistribute or redirect support stresses alone is not enough to characterize a viable fail-safe feature to avoid progressive collapse. The additional capability of providing stable *equilibrium* must occur after the anticipated component failure. Equilibrium is defined by its three conditions — *stable, neutral* and *unstable.* The conditions of equilibrium that characterize redundant behavior if activated by the anticipated component failure are

- If the redundant path of redistributed or redirected support stresses activated by the anticipated component failure provides a greater load capacity than the path of support stresses originally provided then it *may p*rovide stable equilibrium.
- If the redundant path of redistributed or redirected support stresses activated by the anticipated component failure provides the same load capacity as the path of support stresses originally provided then it *may* provide neutral equilibrium.
- If the redundant path of redistributed or redirected support stresses activated by the anticipated component failure provides less load capacity than the path of support stresses originally provided then it *may* provide unstable equilibrium.

For a structural system to be fail-safe from progressive collapse whether for an anticipated strength failure or service load failure — fatigue failure for example — the redundant support path in the structural system must provide stable equilibrium if it is activated by the anticipated component failure.

The engineering would appear to be more difficult than the technical concepts and may require substantial creative thought beyond applying a standard specification. It may include

- anticipating causes and modes of progressive collapse and their *probability* of occurrence to be considered for a given structural system and
- selecting a cost-effective structural system that provides fail-safe conditions for the anticipated causes and modes of progressive collapse.

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sage, and it could possibly be the end of summer before the final bill is sent to the White House. Whether TEA-LU is finally authorized at the proposed $284 billion or the $375 billion that some are seeking, my personal message to those I met was to please pass something!

There is a reason the airports, bridges, dams, waterways, parks, railroads, roads, schools, transit systems, drinking water, wastewater and solid waste facilities are declining in the United States. It is due to lack of major maintenance or replacement once their useful life has been exceeded. The ASCE estimates that it would require as much as $1.6 trillion to immediately and fully address these needs.

As the oldest engineering society in the United States, the ASCE has taken a leadership role in exposing the poor condition and the ongoing state of its infrastructure since it released its first report card in 1998. President Henry reminded us that for civil engineers there is no other organization better than the ASCE to objectively assess the nation's critical infrastructure needs in the public works arena.

Some in the media have questioned the motives of the ASCE in advocating infrastructure needs, as if to imply that its vested interest is to create work for its constituent civil engineer and contractor members. I like to make the point that the ASCE membership is comprised of more than private sector civil engineers and contractors. One need only look at the diversity within the leadership of the Louisiana Section that is representative of the diverse membership of its branches representing university professors and government civil engineers employed at the federal, state, parish, and city levels, as well as other units of government such as port authorities and levee districts.

President Henry likes to refute such allegations by asking if someone would go to an accountant for a medical examination? We, as civil engineers, are the experts on the civil engineered infrastructure and the ASCE provides the civil engineering profession the means through the collective voice of its membership to effectively reach those who set our nation's policies and agenda. This is the whole point of ASCE's *2005 Policy Week* and the ASCE *2005 Report Card for America's Infrastructure.* And yes, TEA-LU will create jobs — all sorts of jobs — whether you call it trickle-down economics or spin-off benefits. Some estimate that for every $1 billion spent on transportation projects, it creates 47,500 jobs. Is there anything wrong with creating domestic jobs and reaping the long-term economic benefits from repairing and re-building our nation's infrastructure?

The ASCE arranged for us to visit with our respective congressional leaders. We were able to collectively meet with the staffs of Senators Mary Landrieu and David Vitter. Part of our message was to volunteer the membership of the ASCE as a resource on technical matters concerning the public works infrastructure in the United States. We also separately met with our representatives. I was able to discuss these same issues with Representative Charles Melancon, who represents my district. Preaching to the Louisiana congressional delegation in favor of these issues was like promoting the American flag. They are keenly aware of the infrastructure needs of Louisiana with respect to federal funding for transportation. They were cordial and attentive, and appreciated the well-presented materials provided by the ASCE delegation.

Some sections have also created individual infrastructure report cards for their states. During a recent Section Board of Directors meeting, President Norma Jean Mattei, PE, discussed this possibility relative to the Louisiana Section. Daniel L. Bolinger, PE, a past president of the New Orleans Branch, accepted her appointment to chair a task force to develop a *Report Card for Louisiana's Infrastructure.* Later this year, he will be recruiting help from the engineers in the various areas of government and from other sources to aid in developing the report card. Please consider volunteering your expertise and data sources to aid the process and cooperating with the process if your services are sought.

Did you know…

...that there is a suggestion to rename progressive collapse *disproportionate* collapse since almost all building collapses are progressive and should be of concern only when their progressive collapse is disproportionate to what caused it? As an example, the World Trade Center towers on 9/11 suffered progressive but not disproportionate collapse because no rudimentary structural change in the design would have been capable of reducing the scale of the collapse. The three main structural methods to resist progressive collapse are redundancy or alternate load paths, local resistance or the hardening of vulnerable components, and structural interconnection to boost redundancy. - *ENR* 04/12/04

Something of value

The *Our Views* column on the op-ed page of the December 28, 2003 issue of the Baton Rouge *Sunday Advocate* lambasts Louisiana's state government's propensity to create unnecessary boards and commissions. The column focuses on Louisiana's retail florists who are a licensed and regulated profession under the Horticulture Commission of Louisiana. It was noted that the practice recently attracted national derision in a *Wall Street Journal* article. The pertinent text notes

> We can think of no good reason why the state of Louisiana ought to determine who is qualified — and who is not qualified — to arrange flowers in a vase.
>
> Yet under Louisiana law, every floral business must employ at least one licensed florist. Business owners who fail to obtain a license personally must hire someone the state decides is fit to do the job. If that employee quits, the business under law must close its doors until another is found...
>
> Obtaining a floral license is not as easy as demonstrating one can cut stems off a rose without slicing a finger. In addition to paying $150, applicants must pass a difficult test, including a written portion and a floral arrangement portion...
>
> Tests are graded by licensed florists. In other words, those with an interest in limiting the number of competitors in Louisiana's floral industry...
>
> Flower shops are not the only business in Louisiana that are over-regulated. The Legislature's Internet site lists 534 boards and commissions...
>
> State boards and commissions and agencies are stacked with thousands of members, many of whom are appointed by the governor. How many boards do we need? If boards act only to restrict competition, they cost every consumer something every day. And that's not counting the direct costs of employees and executive staff in the more affluent agencies...

Introduction

The Louisiana Professional Engineering and Land Surveying Board (Board) is one of the 534 boards and commissions in Louisiana and I suspect among the more "affluent" ones to which the article referred. We licensed engineers pay a biennial license fee to sustain the cost of its operation independently of state funding. In reality this fee is a state license tax paid directly to the Board rather than to the Treasury and disbursed to the Board from the general fund. We like to believe that the Board has a real reason to exist. I am confident that the intrinsic value of the Board would resonate with the public if its intended function as I understand it was placed under scrutiny.

I believe in some important ways the Board can and does effectively regulate the character of the practice of engineering in Louisiana. However, in operation it may create serious problems for itself and those it regulates by adopting inappropriate rules and enforcement practices. Ostensibly the rules are an extension of the enabling statutes to guide and regulate the appropriate practice of engineering but they just happen to also unfairly limit competition in the private sector favoring those who are exclusively represented on the Board. I further believe this behavior results in conditions that "restrict competition... (and as a result unnecessarily) cost every consumer something," corrupt the integrity of this important public regulatory asset and force licensed engineers in Louisiana into profligate waste and behavior.

It is interesting that a rare few state boards have demonstrated the courage of conviction and the insight not to succumb to thoughtlessness in developing their rules. It cannot be ascertained or known with any certainty whether conscious or base motive, or just thoughtless coincidence led to some of the poorly considered rules adopted by the Board, but I believe that irrelevant of culpability the adverse effects on licensed engineering practice in Louisiana are clear.

Testing

Some 30 years ago the Board appears to have blindly lifted the model law of the National Council of Examiners for Engineering and Surveying (NCEES) that *arbitrarily* and *incorrectly* assumed that the principles and practice examination (PE) measures the education obtained during internship *after* graduation. The NCEES recently renounced its own obviously incorrect premise doggedly held for 30 years. I believe that the Texas Board of Professional Engineers was one of the few that recognized the obvious fallacy in the NCEES assumption and

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Experience and instinct

It was reported in the *New York Times* 11/09/03 that some of the construction workers sensed structural problems prior to the collapse of a parking garage on October 30, 2003, while it was under construction in Atlantic City, New Jersey. These construction workers, and not trained structural engineers, observed prior to the collapse

- false work supporting recently placed floors "bent out of shape"
- concrete that had not set completely and
- cracks in the floors and supporting columns.

These observations led to such serious concerns about the safety of the structure that the workers expressed them to their foreman. They were advised not to worry. The resulting collapse killed 4 and injured 20 workers. Construction safety has been an issue in the past for the same concrete placement contractor when in 1995 an incident resulted in it being found in "willful violation" that resulted in fines and a second incident in 2002 that resulted in OSHA violations being charged and another fine.

This incident brings to mind an early experience I had working in the bridge design environment. There was a pedestrian bridge being designed in the office in which I was not involved. However, one of the most experienced draftsmen in the office, whose desk was adjacent to mine, was assigned to draft the structural details for its steel superstructure. When he was near completing the structural details, for some reason he asked my consultation on a nagging concern he had. His explanation to me was, "I don't know why but there is something about these details that does not feel right. Would you look at them and see what you think."

I reviewed the details he was referring to specifically which focused on the center bearing of the two-span continuous girder superstructure. After my review and giving the details some thought without formal analysis it became clear there was possibly a significant problem. The bearings for this very light pedestrian bridge, steel girder superstructure had no provision for uplift. The bridge was located in an open costal area and a hurricane-prone region that would appear to make uplift an important issue for such a light structure. The bearing was detailed very similarly to those used on intermediate span highway bridges in the area for which hurricane winds do not produce uplift in excess of their substantial mass. Needless to say, uplift provisions were needed and made in the final design and structural details.

In another example, we were having chronic problems with a large inventory of approximately 3000, 19-foot, simple span, treated timber bridges many of which were seriously understrength. Their stringers in or near the wheel path were routinely fracturing near their third points. This was where the direction of the more or less diagonal wood grain structure in the stringer was perpendicular to the diagonal (principal) tension stresses caused by the imposed live load plus dead load shear. This apparently presented the weak plane in the timber to the diagonal tension stress leading to failure. The conventional solution was to add stringers to either side of the broken stringer — a difficult and time consuming maintenance procedure that was often not successful.

A senior technician in charge of the maintenance inspection and repair of many of these bridges with substantial experience in inspection and in making the repairs developed and independently field tested an efficient and effective repair method. It required a small fraction of the cost, material, time and effort of the conventional repair and had the additional advantage of being more reliable. With some trepidation he shared his repair method with me. Upon review, I discovered that the repair appears to essentially behave like conventional stirrups in a reinforced concrete beam intercepting diagonal cracks and could be analyzed and justified similarly. I still don't know how we well-educated engineers so completely missed this simple, inexpensive solution, but we did and this technician did not. It took the instincts and courage of this technician to independently discover and test it inside of an engineering organization. He seemed to instinc-

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never bowed to its model rules requiring that the PE be administered only after 4 years of internship. The Texas Board realized the obvious that the test principally covered education obtained prior to graduation and that it was only important if, and not when, the required knowledge is demonstrated.

NCEES now openly admits that the only effect the 4-year waiting period had was to impede qualified candidates in getting licensed and to discourage others from even applying because of the unreasonable rule that principally tests academic training prior to graduation and thus one's memory to retain it for 4 years. Just the notion of a prerequisite for testing of an arbitrary 4-year waiting period to when it is arbitrarily and incorrectly assumed that one possesses the required knowledge to be tested goes beyond reason. It is purely ridiculous considering it increased the failure rate and decreased the application rate of many qualified people. This possibly affected their career-long income and their relative success in the profession. It also thwarted an expressed interest in the engineering profession in more universal licensure.

News flash! I believe the right thing may have been done for the wrong reason. The academicians who originally promoted this false premise in the NCEES recently relented. It appears that they now wish to use the PE along with the fundamentals examination (FE) as a standard outcome assessment of their engineering curricula. Otherwise, this farce would be thoughtlessly and indefinitely perpetuated by the NCEES and most of its member state boards.

Professional development

I will not get into the incredibly convoluted story of architects and fire code, and the logic — or the lack thereof — that finally pushed the Board into requiring full-blown, mandatory continuing professional development rules for licensed engineers. It will suffice to say that the principal force that was never enough to make it happen had long been the mistaken premise that a certain group of licensed engineers in Louisiana were considered "poorly educated, unethical and incompetent" by their competitors who are active in the engineering societies and who serve on the Board. Mandatory continuing education was deemed their solution to this problem.

Having participated in the mandatory continuing professional development process, I believe that the *education* deemed acceptable is so specious that apparently no one has the gall to refer to it as education — hence, *professional development.* I suspect that the alleged education problem identified among those certain engineers can now be laid to rest with the ineffective mandatory continuing professional development they have to purchase. I further suspect that this is made possible because no significant continuing education is required and no significant incompetence problem ever existed. Needless to say, the alphabet soup of organizations (ASCE, LES, et al) who are heavily represented on the Board do not object to the seminar and conference registration fees they collect and are wasted by the audiences forced to attend them to meet the mandatory continuing professional development requirements.

Plan stamping

The Board changed its rules concerning the use of seals to be consistent with the NCEES model rules which I view as questionable in intent. In Louisiana the rules appear to be subject to a wide and subjective interpretation that seems to change like the wind to mean whatever the Board wants them to mean and depending on who is violating them. In any event, the literal rules are flagrantly and necessarily violated by all practicing engineers involved in plan and specification preparation because they essentially have the effect of copyrighting every detail and note of every set of engineering drawings and specifications that were ever produced and that by practical necessity are, for the most part, used repeatedly from project to project. This appears to be an area of copyright law that I believe is completely outside of the Board's statutory jurisdiction.

I believe that the rules have been arbitrarily, conveniently and selectively enforced against one- and two-man operations that do not have the resources to defend themselves by appealing the Board's ruling to a court of law that is beyond the jurisdiction of the Board. Whether intended or not, these rules and their enforcement in Louisiana have the effect of selectively restricting the practice of individuals and small engineering businesses that are conspicuously not represented on the Board. The rules and their selective enforcement undermine and discourage the practice and competitiveness of small engineering businesses — that same group of engineers alleged to be "poorly educated, unethical and incompetent" by their competitors.

The Indiana Board of Registration mistakenly attempted to enforce essentially the same stamping rule against an engineer employed by a large engineering firm with the resources to defend him in court and it did so successfully. In 1992, the Indiana Court of Appeals in the case of **Board of Registration v. Nord** essentially considered the preparation of engineering drawings (and written specifications) separate from the engineering work required to prepare them — which it is! The Court ruled in favor of the engineer. (*Civil Engineering,* 3/93, p.32)

Conclusion

Intrinsically, I believe there is clear justification for the existence of the Board to regulate and license engineers in Louisiana. This is particularly true when compared to the commission that regulates and licenses retail florists. However, I believe that some extrinsic acts of the Board to regulate engineers appear to create the same shortcomings for which the regulation of retail florists is held to ridicule. It is my belief that if inappropriate rules and acts of the Board "...restrict competition... (and unnecessarily) cost every consumer something every day...," they weaken or destroy the intrinsic value of the Board. These rules and acts increase the costs of engineering services through inappropriate regulation and offer no apparent value to the public supposedly served and protected by the Board. I also suspect that some of these rules and acts may violate federal antitrust law by menacing the practice on individuals and small businesses with stamping rules and increasing their overhead cost and reducing their efficiency by requiring their purchase and participation in unnecessary and irrelevant continuing professional development.

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tively know with confidence that it would work before any engineer did, yet to this day he can't explain technically why it works even though I tried with little success to explain it to him.

The details of this repair were published some years later in an NCHRP synthesis report and dubbed as the "Wyoming" repair for timber stringers. Its discovery is credited to the Wyoming Department of Transportation. While we may have independently discovered the same repair, I suspect otherwise because I provided the repair details to an office of the U.S. Forest Service in Wyoming some years before the report was published.

Living in an industrial area, I have often heard complaints expressing strong resentment from technicians — mostly in construction, operations and maintenance — that engineers tend to have an air of arrogance and certainty and yet a lack of depth of understanding of the problems that they are sometimes faced with. Not being open to advice from — or discussion with — experienced technicians and operators, they sometimes make decisions that lead to predictably unfortunate, if not disastrous, consequences that are a direct result of their hubris. The war stories seem endless.

I don't know how the technicians in these examples cited *sense* the problems they do any more than the construction workers *sensed* the problems they did. However, I believe that the experience of the *informally* trained non-engineer technicians with long years in conscientious service is real and should not be ignored simply because they lack formal training or because they may not even technically understand what they may instinctively sense.

I believe that the message in these stories is that in engineering as in life native wisdom is sometimes available from the most unlikely sources. Am I willing to have the humility and patience to be open to its discovery?

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such activities. Given the opportunity, please get involved. From my experience, engineering is an equal opportunity profession, so do not let a guy from Harvard lead public opinion to the belief that engineering and the sciences are for baby Einsteins only.

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ated cutter mounted on a 52' extension handle. The removed bead is carefully inspected for each completed joint to verify that no beads or sharp edges remain inside the pipe joint and that no constriction — reduction in the inside diameter - caused by the fusion process exists.

With the backstring fabrication underway, the HDD operation under the Mississippi River began with a targeted completion to reasonably coincide with the completion of the backstring.

Drilling

The drilling was accomplished using the HDD rig mounted on a flatbed trailer chassis shown in Figure 7. It functions similarly to a conventional oil drilling rig and it uses much of the same standard drilling equipment and operations used in oil drilling. The rig was situated and elevated to provide the planned 11° angle slope at the entry point on the west bank batture. The drilling rig was supplied with a separate hydraulic pump unit for powering a hydraulic motor to rotate the drill string. This hydraulic pump unit also powered another hydraulic motor that was used to push or pull back the drill string as well as operate a set of chocks to tighten or loosen the drill pipe couplings.

Throughout the drilling operation a mixture of river water and naturally occurring bentonite clay — referred to as drilling mud — is used to maintain the integrity of the drill hole, and provide lubrication for drilling and the fluid medium to remove the drill cuttings. The drilling mud used has a density of approximately 12 pounds per gallon compared with that of river water at approximately 8 pounds per gallon. The drilling mud being more dense causes a sustained hydrostatic pressure on the wall of the drill hole throughout its length that prevents its collapse from the pressure of the river water and the river bottom soil overburden.

Steering

The drilling rig used a standard 4⅝" diameter drill pipe in nominal 30' lengths with industry standard couplings. The drill bit used and pictured in Figure 8 is similar to those used in oil well drilling. It was attached to a length of drill pipe with a bend that directs the drill bit 1½° off of the axis of the drill string. The drill bit is equipped with 3 mud jets 120° apart about its axis of rotation one of which is intentionally plugged. Shims are inserted as required behind the drill bit as the bit is screwed on the drill pipe to align the 2 open mud jets with the inside of 1½° bend in the drill pipe once the drill bit is attached.

To steer the drill string, the orientation of pipe bend and open mud jets are indicated in the drilling rig control room on an instrument that resembles a clock. Steering of the drill string is accomplished by orienting the 1½° bend and the mud jets to the desired change in direction and pushing the drill string forward without rotation and with the mud jets operating.

Location

The location of the drill line is provided by an accelerometer like the one shown in Figure 9. It is installed in the drill string just behind the drill bit. The accelerometer measures the magnetic field of the earth and is used to provide the x-y-z coordinates of the drill bit at the completion of each 30' length of drill pipe. The accelerometer installed in the drill string behind the drill bit is connected to instrumentation in the drilling rig control room via a single wire conductor. As each added length of drill pipe is coupled to the drill string, a length of wire is also drawn through it and connected to the previous wire in the drill string with a waterproof splice.

Figure 9. Accelerometer resting on the fender of a construction implement before being inserted in the drill pipe directly behind the drill bit.

The magnetic field of the earth can be distorted by large, nearby metal objects and electrical fields. To compensate for this possible distortion, a loop of electrical wire is laid out on the ground in the form of a delta with its apex angle bisected by the design drill line path and the apex located near the drill line entry point. A loop of electrical wire is similarly placed near the drill line exit point. A welding machine is used to impress a direct current through the loop causing a static magnetic field that can accurately locate the drill within the loop. The trade name for the loops and the accelerometer steering device is the *true-tracker* system. When the drill bit is travelling between the wire loops near the entry and exit points, directional tracking relies entirely on the magnetic field of the earth.

After traveling approximately 3300', the drill string approached the east bank loop which was strung from the planned exit point to dolphins in the river. When the loop was energized, it was determined that the drill string was located 2'

Figure 10. Drill emerges 4" from the planned exit point. The point of the delta loop is visible to the right of the exit point as are the electrical wires that lead to the 2 dolphins — one shown in the background.

Figure 11. 48" swab followed by the 54" reamer being pulled through the hole as it emerges at the drilling rig.

Figure 12. View looking north away from the river of backstring ready for pullback operations.

Figure 13. View looking south toward the river of backstring ready for pullback operations.

higher than the planned drill line. To correct this error in elevation, the drill string was pulled back 3 drill pipe segments — approximately 90'. The 1½° bend and mud jets oriented to provide the steering required to correct the error and achieve the desired exit point. The drill string was then pushed back without rotation until the error was corrected. The drill bit rotation was resumed after the correction was made and the drill line remained on the design drill line path until the desired exit point was achieved. The drill bit broke ground September 13, 2003 just 3 days after the HDD operation started. After the drill string had traveled almost 3500' the exit point was only 4" from its planned exit point as shown in Figure 10.

Reaming and swabbing

With the drilled hole complete and the accelerometer-surveyed HDD route matching the planned route, the drill hole was enlarged to the 54" diameter required for the installation of the backstring. To enlarge the size of the drill hole, 4 progressively larger *reamers* were successively and individually pulled through the drill hole with the drill string. Each reamer was pulled by the drilling rig from the east bank to the west bank until it exited at the rig.

The first ream from the east bank — a 24" diameter reamer — was connected to the end of drill string followed by a drill pipe segment connected to the reamer. As the reamer was pulled through the drill hole to the west bank, drill pipe segments were progressively added and coupled at the east bank exit point. This required the drill pipe that was uncoupled and removed from the drill string at the west bank entry point to be trucked to the east bank where it was being added as the ream progressed.

The initial 24" in diameter ream was followed by a 36" diameter ream with a 20" diameter swab. The swab was used to center the reamer in the hole and to remove cuttings and debris. A *swab* is a short piece of pipe with mud jets and cutting teeth located on end bells at each end of the pipe. Following a 30" diameter swab without a reamer to remove cuttings, a 48" diameter ream was made followed by a swab without a reamer. The reaming and swabbing were completed with a 54" diameter ream and a 42" diameter swab as pictured in Figure 11. This was followed by 2, 42" diameter swabs without a reamer.

Pullback operations

As drilling and reaming progressed, the fusion process for the backstring was completed. After the reamed hole under the river was completed, the pullback operations began using the drill string and the drilling rig to pull the backstring through the drill hole under the river. On October 14, 2003 pullback operations began with the backstring shown in Figures 12 and 13 entering the hole as shown in Figure 14 at 12:32 pm. Backstring installation was completed the morning of the next day at 5:14 am when the pulling head emerged from the west bank batture as shown in Figure 15.

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Figure 14. Backstring on the east bank batture at the beginning of the pullback operation showing the 12-pipe duct bundle strapped with stainless steel bands.

Figure 15. Backstring on the west bank batture at the end of the pullback operation showing the 12-pipe duct attached to the pulling head.

Figure 16. Construction of a termination structure showing the end of the duct entering through the floor.

Figure 17. Truck transporting one of the 72-ton cable reels from the Port of New Orleans to the east bank site.

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The backstring was bundled using 2" stainless steel straps and the bundle was attached to a pulling head as pictured in Figure 15. A 4" water line was inserted in the 18" diameter center pipe to the pulling head which acts as a manifold to distribute water supplied by the water line to the pipes in the bundle as the backstring is pulled under the river. Filling the bundle with water on land would have added so much weight the backstring may have become very difficult if not impossible to handle. Water was added to fill the bundle to approximately the same elevation as that of the river as it was pulled under the river. The water-filled bundle substantially reduces the buoyant effect of the backstring once it enters the hole reducing its vertical component of force on the top of the hole and thereby the sliding friction on the backstring during pullback operations.

Following pullback operations, the bundle was tied to the drilling rig for 24 hours to prevent the end of the duct from creeping back into the drill hole as a result of any potential relaxation of the HDPE pipe. Upon successful installation of the backstring, the integrity of each pipe in the bundle was proved with a gauging pig that was also used to pull a ⅜" diameter rope through the pipe to serve as a tag line. The tag line would be used to pull a steel wire cable through the pipe to pull the electrical transmission cables through the pipe. After the integrity of the pipes was confirmed, the ends were temporarily sealed with the tag lines installed while the concrete termination structures were constructed around the duct ends on both banks as shown on the cover and in Figure 16.

Cable installation

The concrete termination structures serve to protect the electrical transmission cables exiting the duct ends, and support the electrical transmission cable terminations and the A-frame structure pictured on the cover. The termination structures also provide for the transition from the electrical transmission cables to overhead electrical transmission lines that connect to the existing utility transmission system via the A-frame structure.

Delivery

The 8 electrical transmission cables to be installed in the duct passing under the Mississippi River were manufactured in Japan. They arrived at the Port of New Orleans during the construction of the termination structures — each on a 72-ton reel. The reels were transported by truck as pictured in Figure 17 arriving on the east bank site in preparation for their installation. For brevity in notation, the electrical transmission cables will be referred to here for-

Figure 18. Ramp to support and guide the cable into its pipe from the reel mounted on the handler on the east bank.

Figure 19. Ramp to support and guide the cable from its pipe to the crown of the levee on the west bank.

Figure 20. The cable haulers or caterpillars located near the entrance of the cable to the duct in the termination structure on the east bank.

Figure 22. The cable coil support structure inside a termination structure.

ward simply as *cables*.

Once the construction of the termination structures was completed, temporary ramps were installed to support and guide each cable into its pipe in the duct. The ramps were placed from the cable reel to the duct on the east bank as shown in Figure 18 and from the duct to the crown of the levee on the west bank as shown in Figure 19. When the cable installation preparations were complete, the first cable reel was moved to the *reel handler* that is powered by a hydraulic pump unit and positioned to feed the cable from the reel to the duct as shown in Figure 18. The operator of the reel handler controls the play out speed of the cable off the reel to closely match the cable installation speed.

Process and control

The cable is pulled through its pipe in the duct by attaching it to the steel wire cable installed in the pipe and drawn by a winch on the west bank The installation speed is therefore determined by the winch pull rate. Control of the cable reel play out speed is to prevent excessive axial tension or compression forces in the cable that would either add significantly to the pulling tension on the cable or cause the cable to buckle and kink.

Cable haulers shown in Figure 20 also known as *caterpillars* were installed just before the cable entered the duct in the east bank termination structure. These caterpillars have the capability of *holding back or pushing* on the cable during its installation. Since the first leg of the cable's travel in duct under the river is at an 18º angle decline, there was a concern that the weight of the cable would tend to pull cable from the reel. Actually, the caterpillars were needed during cable installation to hold back on the cable as it traveled through this downward slope of the duct to elevation -185' and through the entire horizontal run at elevation -185' across the river. Once the cable started up the 11º angle incline to the exit on the west bank batture, the caterpillars started pushing on the cable as needed to minimize the pulling tension on the cable.

Reduction of the pulling force on the cable caused by its weight was also achieved by filling its pipe with potable water. The displacement of this water by the cable reduces its weight by the weight of the water displaced. Thus the forces are reduced that would otherwise result from the gross weight of the cable and the higher sliding friction throughout the installation.

Racking

Once all the cables were pulled through the duct they were coiled in the termination struc-

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Figure 21. A cable is being lowered by a crane and coiled or racked on the coil support structure.

Figure 23. The strands at the end of a cable are being manually splayed in preparation for sandblasting to remove the enamel insulation.

Figure 24. A termination assembly is being lowered to attach it to a sandblasted and rewoven cable end and complete the termination.

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tures. The coiling of cables known as *racking* is done to address two needs. The first is to provide a sufficient length of cable should re-termination of a cable ever be required. The second is to address the thermal cycling movement of the cable and the resulting tendency of the cable to *snake* in the duct throughout the life of the installation. The maximum cable extension out of — and retraction into — the duct was calculated to accommodate this movement in the rack design. The cable racking required a crane with a 255' boom to lift each cable by the end and lower it as shown in Figure 21 into a coil supported by a series of racks designed for that purpose and shown in Figure 22. To facilitate this installation, removable panels are provided for each termination structure for unobstructed access.

Termination

After all the cables were racked, each one was terminated. This is accomplished by a crane lifting each cable end and securing it to scaffolding for support and access to allow termination. One interesting aspect of the cable design is that each copper conductor strand in the cable is insulated with an enamel to increase current carrying capacity. For termination, however, the enamel has to be removed by splaying a length of the strands at the end of the cable as pictured in Figure 23 and sandblasting them to remove the enamel. The splayed strands are then rewoven to their original shape to complete the termination by attaching the termination assembly shown in Figure 24. The installed termination assemblies are shown extending above the top of the completed termination structure shown on the cover. Once all of the terminations were completed, the A-Frame structures were erected and the final overhead connections were made to the transmission grid on both sides of the river and the river transmission line crossing was energized.

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