THE LOUISIANA CIVIL ENGINEER

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

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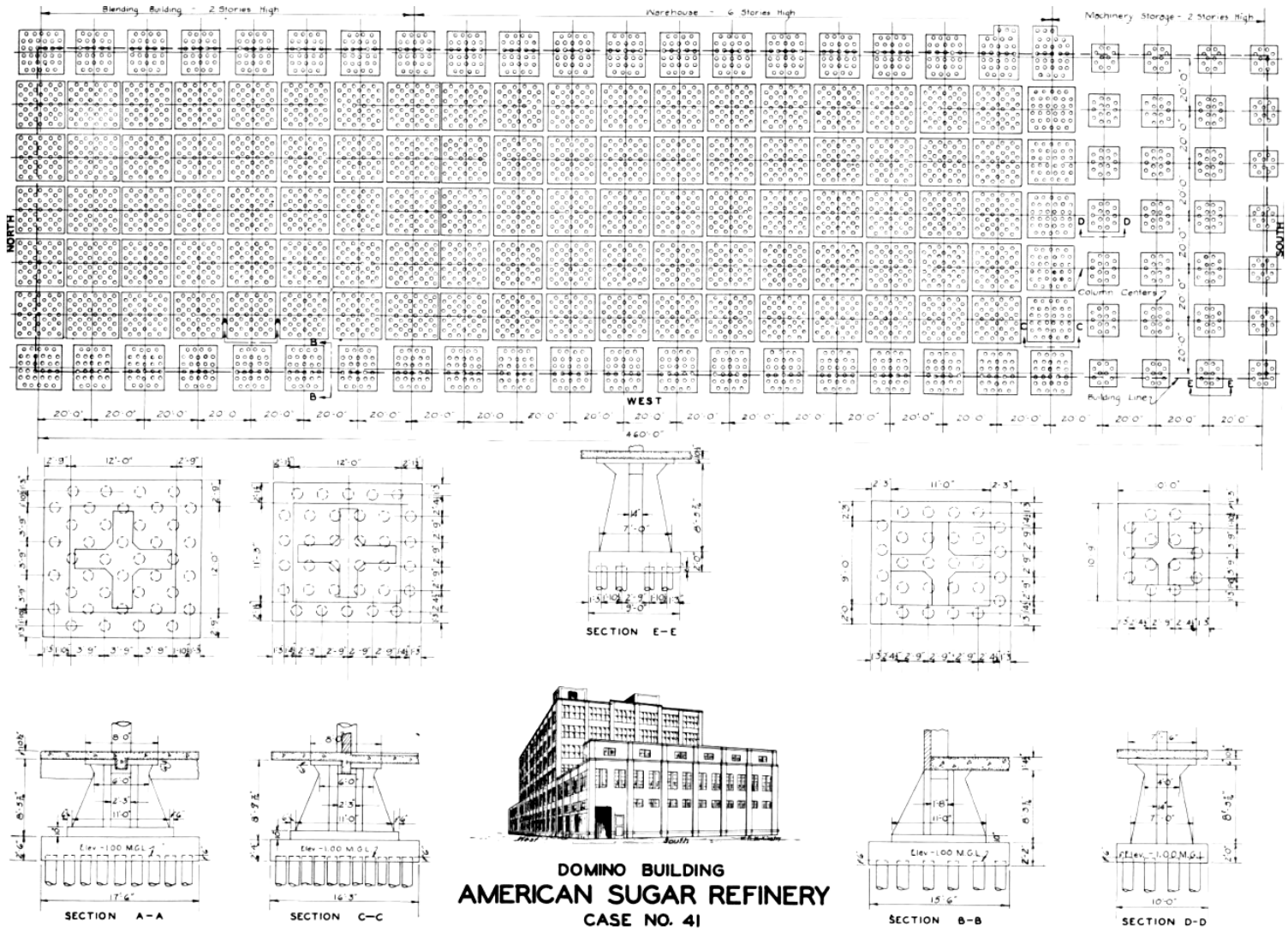

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President's Message

Barbara E. Featherston, PE

The state of our infrastructure is a very important issue that has a significant impact on our daily lives as well as our profession. As engineers, it is part of our business to design, construct, operate and maintain the infrastructure — roads, bridges, pipes and pumps, etc. — to facilitate the development of our civilization. As a practical matter, all of the facilities we design have a life cycle. Within that life cycle it is implied that resources for the expected maintenance and the eventual replacement — nothing lasts forever — are required. Some facilities have different life expectancies and different maintenance requirements.

As engineering students we all took engineering economy that taught us as engineers to take into account the capital cost of a project, its life expectancy and the years between preventive maintenance when we analyze the alternatives for our clients. The problem is when our aging facilities were designed and built, an implied covenant was made to expend the capital to provide for preventive maintenance and replacement when the service life comes to an end. What we are witnessing today symptomatically is the advanced and sometimes premature decay of our infrastructure and the breaking of that covenant made many years ago.

The commitment to maintenance and replacement varies depending upon how visible or how much immediate impact that particular facility has on the general public. If it is a public road that is heavily traveled or important to local business, it tends to get more attention as it degrades than the buried deteriorating sewer pipe that is out of sight. Even with public roads there are proverbial fights to generate and distribute sufficient funds to address the needs in a timely and economical manner.

Louisiana is not the only state struggling with the dilemma of insufficient funding. For some reason the infrastructure is simply taken for granted. It may be because of its demonstrated substantial reliability. It should be and usually is always there, working and not negatively impacting our health, safety and general quality of life. All across the nation we see the same problems in varying degrees. Elected officials generally accept that there are problems with the infrastructure and that they need to be fixed. But infrastructure is not always a high priority and it seems like there are a million hands out seeking and competing for limited resources.

The ASCE in recent years has made an attempt to quantify the infrastructure problem. It has aperiodically developed and published the Infrastructure Report Card that indicates we as a nation fail miserably at maintaining and replacing a large component of our infrastructure that is seriously deficient. The cost estimates for getting the infrastructure up to par are in the billions — a price that seems we as a nation are not prepared politically to pay. So we as engineers are often left to continue working to maintain what we can as best we can with the limited resources available.

The problem is that at some point it would seem the situation is going to just explode! There continues to be a growing inventory of infrastructure that just cannot be effectively operated or maintained. It must be replaced and the related costs continue to escalate with the problem.

What do we do as engineers? We cannot grow or mint money though that would appear to be what we may need to address the problem. How do we generate the funds needed to start to arrest and eventually reverse the state of a deteriorating infrastructure that represents such overwhelming needs? Currently the resources for infrastructure are obtained through fees — water and sewer — and taxes — gas, property, sales, etc. Those are basically the mechanisms needed, we just need to get more from them and ensure they are applied to the infrastructure for which they are designated.

There are some rays of hope on the engineering/political horizon which may effectively generate the public awareness of the realities of the infrastructure engineering issues. Information technology-enabled *asset management systems* developed in the private sector are being implemented at all levels of government. They will provide a powerful tool to not only accurately assess the current conditions of the infrastructure but accurately predict future conditions based on the decisions made and resources dedicated. Further, this powerful engineering tool can accurately estimate the cost of deferred maintenance. Such information effectively communicated to the public and political establishment should promote much more responsible public debate. At least the accurate prediction of future consequences for inaction will leave no excuses and provide a learning experience when the future becomes the present.

The EPA is either working on or implementing a program for water and sewer works that would require municipalities to financially assess those programs similar to a business. The plan includes how much the system is worth, what the expected maintenance needs and costs are and when expansion will be needed and how much it will cost. This would then equate back to an adequate rate of funding that would provide for the needs.

The ASCE National is pushing for the reauthorization of TEA 21. This is an absolute necessity if we are to maintain and replace the aging roads, bridges, ports, etc. I urge everyone to help by contacting your congressmen or senators and let them know the urgency and importance of its reauthorization.

On a lighter but similarly important note, the ASCE National Board of Direction (National Board) voted to put the proposal on governance to a vote of the membership to consider it for adoption into the Constitution. District 14, that includes the Alabama, Georgia, Mississippi and Louisiana sections, and Zone II, which includes several districts including District 14, voted as a block against the proposal on governance. The total vote on the National Board I believe was 19 for and 17 against the proposal. This alone should not sway the individual member's vote come this July when the ballot is received in the mail. I urge each Section member to take some time to review the proposal on the ASCE website www.asce.org and become informed and prepared to vote.

To some extent, I can see why the governance proposal has not caused a grassroots uproar among the general membership. What is proposed will basically streamline the organizational structure of the ASCE above the Section level. It was initially touted as a way to cut some costs of operation but the proponents are wavering on this issue. The proposal eliminates the smaller districts and district councils and establishes larger regions and regional boards.

Our District 14 and either District 10 (the state of Florida) or District 15 (the state of Texas et al) could be merged to form a new region. The sentiments among the Section leadership would be more in favor of a merger with District 10. The representation of the larger region on the National Board would replace the Zone Vice Presidents and the District Directors currently serving on the National Board, reducing its size from 28 to 17 members.

So far so good... The problem is that the details of the organization and operation of the regional boards have not yet been established. If selection to the regional boards is by popular vote then sections like the Louisiana Section might as well sit back and watch the folks from Florida play on the national level.

The opportunity for service on the National Board by a representative from a section is reduced, not only because of the reduction in its size, but also because the proposed "representation" on National Board. Not only will the number of members on the National Board be

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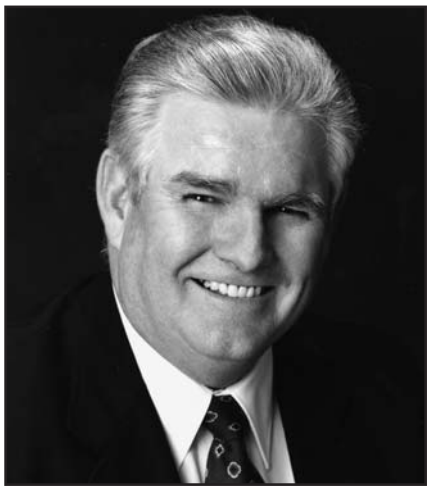
About the cover: *The cover graphic serves as Figure 3 for the feature article in this issue, "History of driven piling in New Orleans." It is a reproduction from the plans of the Domino Building (American Sugar Refinery) (circa 1920) showing the partial details of its pile foundation. The as-built plans for the foundation of the Domino Building represent the first record of a pile load test conducted in New Orleans.*

History of driven piles in New Orleans

By Lloyd A. Held, Jr., PE



Introduction

Since New Orleans is located adjacent to the Mississippi River, it is no coincidence that the River has had a major impact on the riverine soil deposits that are encountered in the region. The near surface soils in the New Orleans area are recent deposits that would be generally characterized as weak, compressible material. For the most part, such an observation is correct in that inland swamps generally exist throughout Kenner and New Orleans East. However, riverine soil deposits immediately adjacent to the river provided a natural levee of much more competent — stronger and less compressible — material. Other natural ridges that occur are point bar deposits, abandoned courses, and beach ridge deposits. These deposits vary in thickness and their surface varies in depth below the existing ground surface throughout the area.

The most competent and consistent geological formation encountered in the area is the Pleistocene formation. This formation has been subdivided into at least 3, and possibly 4, horizons. The *first horizon* — last mapped in 1958 — is generally encountered between el −40 and el −100. This formation typically consists of approximately 5 to 10 ft of relatively thin layers of precompressed clays underlain by normally consolidated clays. The *second horizon* — last mapped in 1975 — is generally encountered between el −120 and el −160. It consists of approximately 40 to 50 ft of over consolidated clays near the top and generally slightly over consolidated to normally consolidated clays near the bottom. The *third horizon* is generally encountered between el −235 to el −240. It is characterized as sandy for up to 10 ft thick near the top underlain by 60 ft or more of highly over consolidated clays. The *fourth horizon* is generally encountered at el −325. It consists of very dense sands and highly precompressed clays.

Early experience

Prior to pile foundations, buildings in New Orleans were supported on shallow foundations for example like the bearing wall foundations used in the Pontalba Building circa 1849 and shown in Figure 1. The first recorded pile foundation in New Orleans shown in Figure 2 was constructed in 1897 and it supported Central Power Station. The foundation consisted of 1,900 untreated timber piles driven to a tip embedment 64 ft to 73 ft below the existing ground surface. The interesting feature of this pile foundation is that the butt ends of the untreated piles are located only 5.5 ft below the existing ground surface and above the water table. It was not until 1922 that the first treated timber piles were used in New Orleans for the foundation of Dinwiddie Hall at Tulane University.

The Hotel DeSoto, circa 1906 was the first foundation of record with a geotechnical recommendation based on soil exploration and testing that included 3 wash borings and the driving resistance record for a steel sheet test pile driven with a 150 pound hammer with a 10' drop. This could be considered something comparable to a modified standard penetration test. The measured resistance at 40 ft penetration below the existing ground surface was 96 blows per foot. The recommended penetration for the untreated

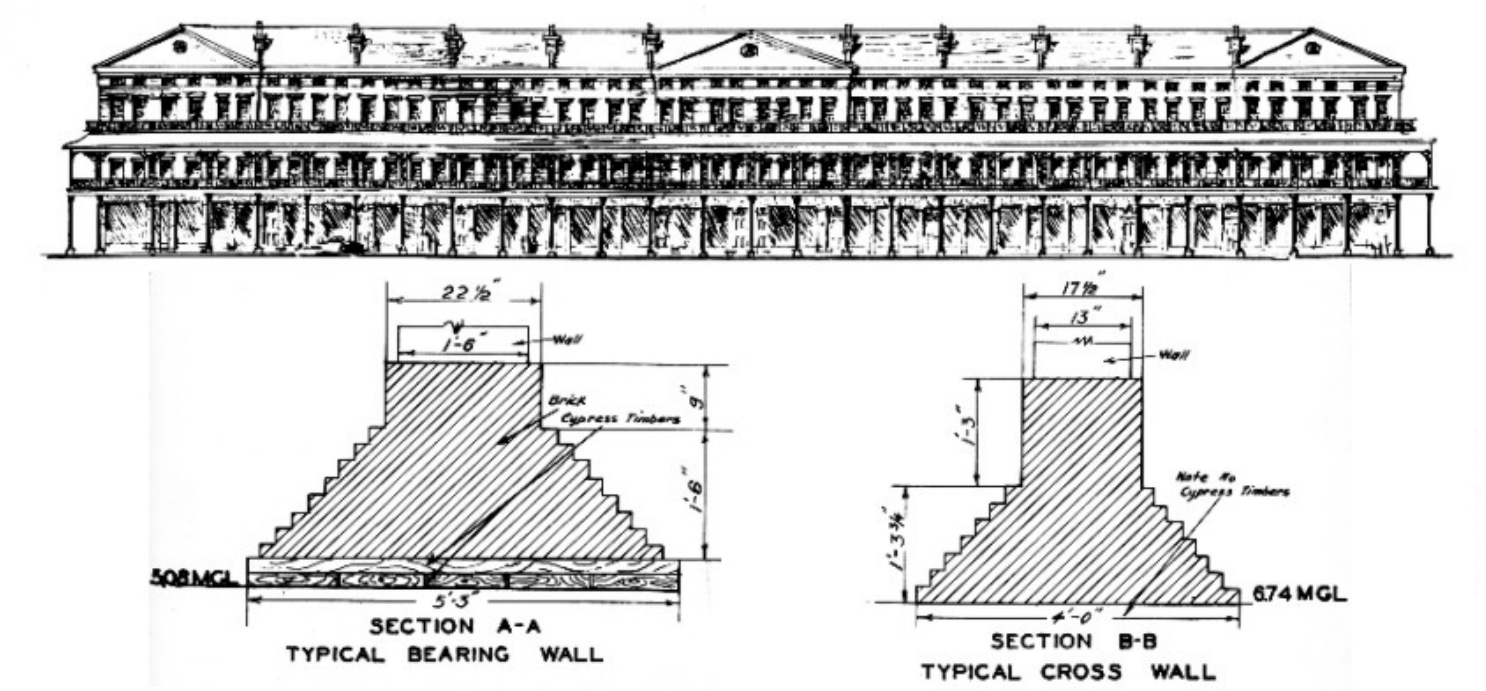


Figure 1. Pontalba Building (circa 1849) and the typical details of cross sections of shallow bearing wall foundations used to support it.

Lloyd A. Held, Jr., PE, is Chairman of the Board of Eustis Engineering Company, Inc. and has been with the firm for 38 years. He earned his BS in civil engineering from Louisiana State University in 1965 and his ME in civil engineering from Tulane University in 1979. Held is a registered professional engineer in Louisiana and Mississippi and his professional experience includes all phases of geotechnical engineering practice with particular emphasis in planning field exploration programs, supervision of soil mechanics laboratory tests, engineering analyses, and engineering report preparation. He has served as either the staff engineer or principal for more than 75 percent of the high rise structures in the New Orleans area. This article was adapted from the paper, "A History of Piles in New Orleans" presented by Held during the 2003 Louisiana Civil Engineering Conference and Show in Kenner.

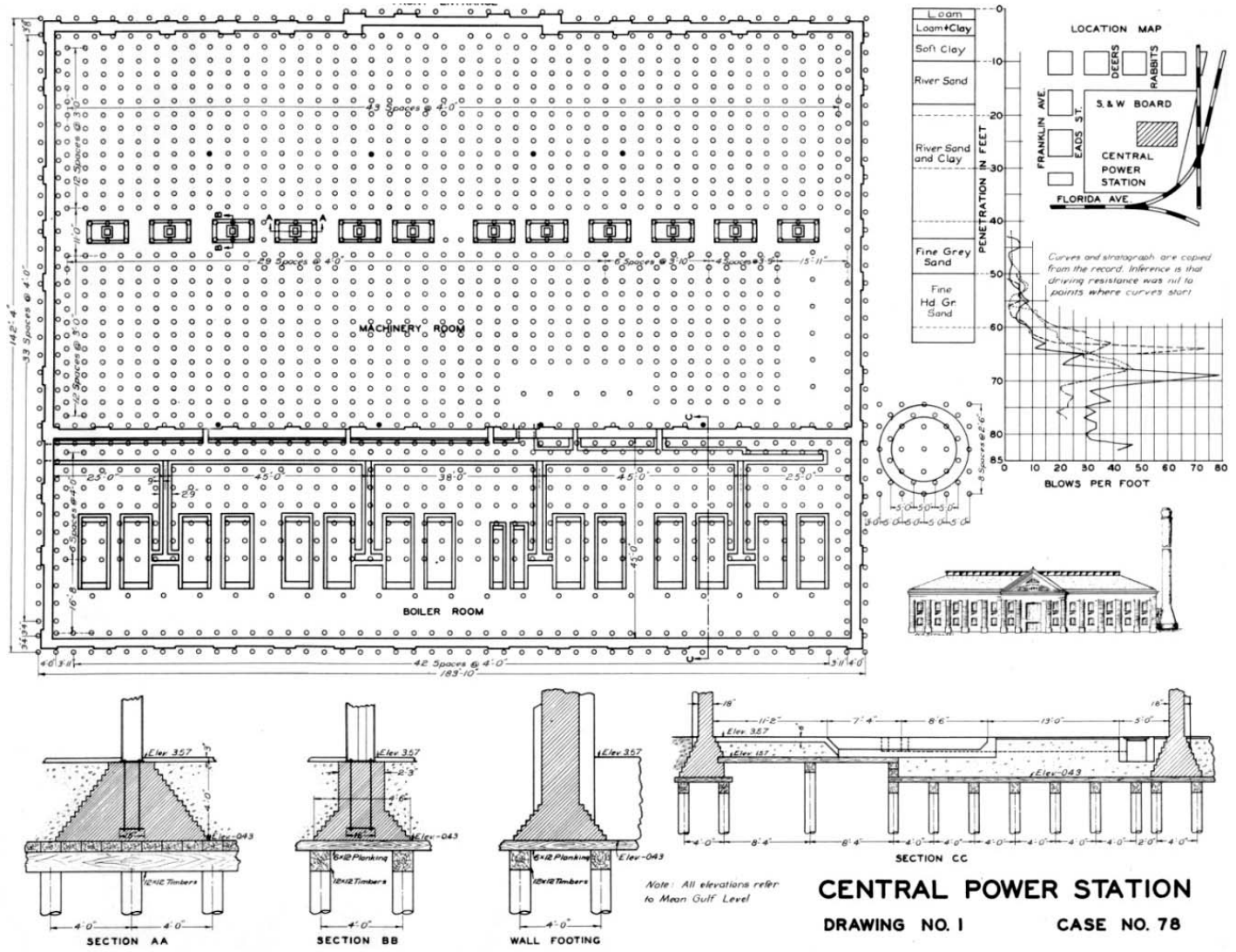


Figure 2. Central Power Station (circa 1887) and the partial details of its pile foundation — the first constructed in New Orleans.

timber job piles was 40 ft below the existing ground surface. The maximum driving resistance achieved was 24 blows per foot and the recommended design load was 12 tons per pile.

Even by today's standards, the foundation for the Domino Building is massive. Shown in part in Figure 3 on the front cover, it was constructed in 1920 for American Sugar Refinery. More than 5,500 untreated timber piles were placed 2'-9" on centers and driven to a tip embedment of 62 ft below the existing ground surface. The piles were driven with a Vulcan hammer having a ram weight of 5 kips and a drop of 42", and the blow count varied from 9 to 25 blows per foot. The first recorded pile load test as shown in Figure 4 was performed for this foundation. During this same time period, the first settlements were measured for the pile foundation of the 20-story Hibernia National Bank building. It was constructed on untreated timber piles with a tip embedment of 67 ft below the existing ground surface. Settlements reached 2.5" when construction operations were completed after which no more settlement observations were made.

In 1937, the WPA of Louisiana studied the experience gained from more than 80 driven pile foundations including those previously discussed. It was discovered that soil borings failed to give satisfactory information and that geological formations can change not just within city blocks, but even under a single building. The conclusion was that if piles are spaced 2' to 3' on centers, driven to a fairly firm resistance, then loaded to 12 to 15 tons per piles, there would be no settlement of the superstructure. *And then came Charity Hospital . . .*

Charity Hospital

The conceptual design for Charity Hospital of Louisiana built in 1938 called for 13- to 14-story wings to be connected to a center core of 13 to 21 stories by 3- to 5-story structures as shown in the schematic of its plan view in Figure 5. The loads that are also shown in Figure 5 varied from 280 to 840 psf under the lightly loaded areas to 3,600 to 5,900 psf under the 13- to 21-story areas. The foundation plan in Figure 6 shows the location of some of the more than 9,700 untreated timber piles driven on the site.

The structural engineer required 5 test borings performed, 10 test piles driven, and 2 test piles loaded to failure. Later geotechnical investigations revealed a dense to very dense sand stratum at a depth between 42 ft and 50 ft, a dense sand stratum at a depth between 59 ft and 68 ft, and a dense sand stratum at a depth between 78 ft and 101 ft. Beneath these sand strata are normally consolidated clay soils to a depth of 150 ft below the existing ground surface. It was the original intent to drive the test piles to a tip embedment of 60 ft below the existing ground surface. However, after driving 5 test piles, it was concluded that the piles were breaking and the specifications were changed to a tip embedment of 42 ft below the existing ground surface.

A settlement of 6" was observed under the 21-story portion of the structure after it was completed in October 1938. By January 1939, the settlement of the 21-story structure had increased to 9" and the heavily loaded wings had experienced 5" of settlement. No explanation could be given regarding the cause of these settlements.

Karl Terzaghi and Hardy Cross were employed by the State of Louisiana to assess the

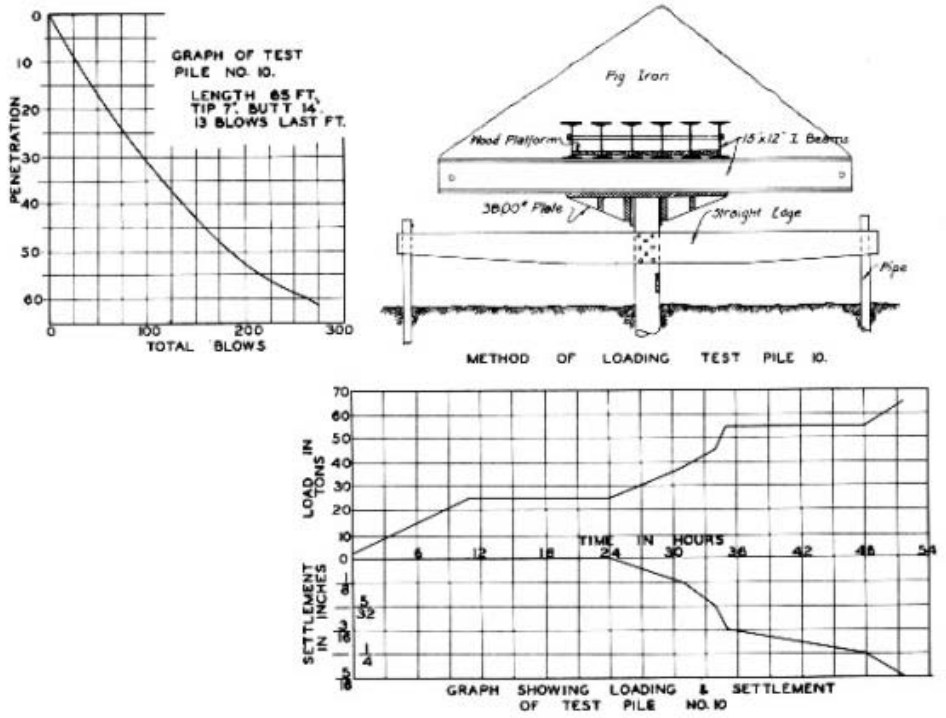


Figure 4. The load test details and results for test pile 10 for the Domino Building foundation.

situation. Hardy Cross was to evaluate the structure and Karl Terzaghi was to evaluate the foundations and the foundation conditions. In doing so, Karl Terzaghi's evaluation introduced the New Orleans area to modern era soil exploration and mechanics. He supervised

- drilled soil borings
- undisturbed samples of the soils and
- consolidation tests on the soils.

He then performed an engineering analysis of the soils from the information obtained.

From his analysis, he estimated that the 21-story structure would settle as much as 19.5" over a long period of time. By June 1940, the 21-story structure had settled 14" and the lightly loaded areas of the structure had settled 5".

In his engineering report, Karl Terzaghi defended the actions of the structural engineer concluding that

> ...the responsibility for an accident can only be established if there exists a general knowledge and accepted procedure for avoiding it. In the case of the Charity Hospital, the accident is represented by the unexpected settlement of a pile foundation. From time to time, one encounters an exception to the average behavior of pile foundations designed on the basis of the accepted rule. The professional literature contains numerous records dealing with such exceptions. Yet to my knowledge, in no case has a designer been held responsible because nobody was in a position to explain the underlying physical cause. Your consulting engineer has fully complied with all customary requirements because he made two load tests, and according to accepted standards, these tests were very favorable. In addition to these, he recognized and avoided the damage of breaking the piles by over driving. Finally, he also noticed the driving of the piles caused an upward movement of the piles which had been driven before and requested the contractor to reseat them. This potential source of settlement would have escaped the attention of many. Considering these facts, it appears to me that your consulting engineer designed and supervised the foundation with more than average care and ability. Seven years ago, I considered a theory of the cause of the exceptional and unexpected settlement of the pile foundations. The settlement of the Charity Hospital is one of many confirmations of my theory. However, in foundation engineering, I would not even dare to apply one of my own theories until I found it repeatedly confirmed by continuous experiences.

Continuing evolution

When J. Bres Eustis, PE, began the practice of geotechnical engineering in the New Orleans area with the formation of Eustis Engineering Company, Inc. in 1946, it had become immediately apparent that heavily loaded foundations would require special attention to minimize settlement. If the timber pile was to continue as the mainstay of foundation support in the area, changes would have to be made... The design loads would have to be increased and piles would have to be driven to greater embedments.

The *New Orleans Building Code* increased the design load to 25 tons per pile for treated timber piles and 30 tons per pile for composite timber piles. Although composite timber piles had been used to support structures as early as 1920, their use was more for the reduction in

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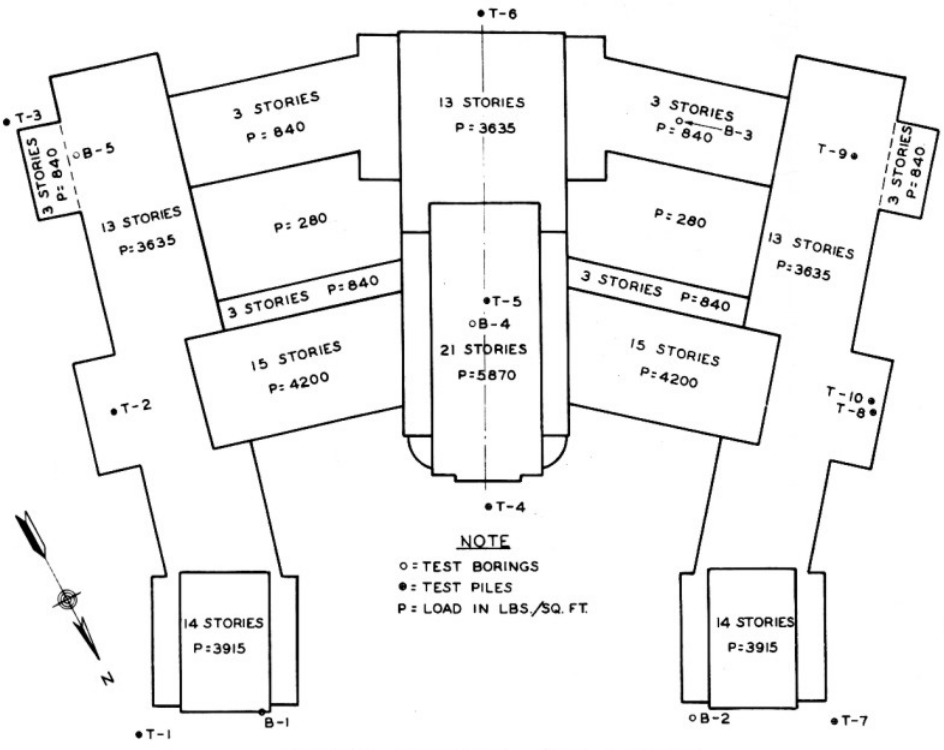

Figure 5. A schematic detail of the Charity Hospital (circa 1938) plan showing the number of stories, the load intensity, and the boring and test pile locations.

News from the Branches

BATON ROUGE

By David M. Burkholder, PE, President

Lisa H. Nice, AIA, of Raymond Post, FAIA, Architects, is the scheduled guest speaker for the January 2004 Branch membership meeting and luncheon. Her topic will concern the 150,000-square-foot expansion of the Baton Rouge Centroplex Convention Center that is currently under construction. This $30 million project began in August of 2002 and it is scheduled to be completed later this year.

The Branch Christmas Party was held December 5, 2003 in the facilities of the Bocage Racquet Club. The popularity of this annual event continued with more than 80 people in attendance. As one of the few Branch-sponsored evening social events, it provides a wonderful opportunity to renew old acquaintances and visit with many of our members who are unable to attend the regular membership meetings and luncheons. This year's Christmas Party was made possible through the generosity and sponsorship of 25 local engineering firms, contractors and suppliers.

Marc Levitan, the Director of the LSU Hurricane Center, gave a presentation titled "Rethinking Engineering in Hurricane Prone Regions: Lessons from Hurricanes Lili and Isabel" during the November Branch membership meeting and luncheon. He suggested that the design for storm surge and wind load should be referenced to the Saffir-Simpson scale for hurricane intensity. Thus a building might be rated for a category 3 storm in a similar manner that its floor loads are specified for a certain occupancy.

Following the November Branch membership meeting, a continuing professional development seminar was presented offering 1 PDU for those in attendance. W. Ryan Tice, PE, who is a Project Manager in Transportation Engineering for Neel-Schaffer, Inc. in Jackson, MS, made the presentation. His topic was "Seeing is Believing: Visual Aid for Project Concepts." To facilitate the understanding of project concepts, the use of visual aids was demonstrated in the form of renderings, before/after photographs, and animation. The process for creating project models, renderings and animation was demonstrated and emphasized through the presentation of several case projects.

ACADIANA

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

On behalf of the Branch Board, It is my hope everyone had a happy and joyful holiday season and may I wish you the best for 2004.

January 27th, the Branch once again will be participating in the 2004 CAREER Connections Expo held in the Cajundome. Our mission is to encourage and inspire the participating 10th-grade students and to answer the questions that they may have about civil engineering as a possible career choice. We believe that participating in events like this really places civil engineering in the forefront of the participating students' thoughts when they contemplate their possible career opportunities.

The December Branch membership function was a Christmas social held at Chris' Po-Boys in downtown Lafayette. The event was jointly sponsored with the Lafayette Chapter of the Louisiana Engineering Society. The food and conversation were great. It is appropriate that we express our gratitude to the members of the Lafayette Chapter of the LES who organized this social.

The Board is currently attempting to identify potential topics that would be poignant and of the greatest general interest to the civil engineering community and appropriate to be presented during the two-day, Spring Seminar planned to be hosted by the Branch. It is planned that during the next meeting of the Board the list of potential seminar topics assembled will be reviewed and narrowed down to the most feasible subjects for the seminar and the facilities to house the event will be considered. The seminar topic should be selected by the time you are reading this message and a search should be underway to identify and invite a recognized expert in that field who is available to come to Lafayette to present the seminar. In the past, the Branch has sponsored a series of great spring seminars. This year is expected to be no exception as a continuation of this series. This seminar will be open to all members of the Section who are invited to participate and we look forward to hosting any Section members outside of the Branch who choose to attend.

In conclusion, may I further wish you peace and joy in the new year.

NEW ORLEANS

By Christopher G. Humphreys, PE, President

The New Orleans Branch has had an active fourth quarter in 2003 hosting several informative technical seminars. This is in addition to the monthly membership meetings it sponsors that feature guest speakers with topics of broad interest to our members and other ongoing plans.

Membership meetings

The October general membership meeting was held in Commander's Palace — one of New Orleans' finest restaurants. The guest speaker was Christopher P. Knotts, PE, Engineer Administrator with the Coastal Engineering Division of the Louisiana Department of Natural Resources. His presentation on America's wetlands and the importance of protecting the Louisiana coastline was of great interest to our branch members as was evidenced by the outstanding attendance of over 80 members and guests.

The November general membership meeting, held in Bravo's Restaurant in New Orleans, featured Lydia Jemison who is a Certified Urban Planner. She discussed the public planning process as it relates to major urban civil engineering projects.

Technical committees

The Branch technical committees have sponsored several technical seminars and are in the process of planning more of them. The Environmental Committee is planning a seminar on New Blending Requirements for Waste Water Treatment Plants. The date and time for this seminar has yet to be determined.

The Structures Committee is planning a seminar featuring Subash V. Kulkarni, PE, who will present an overview of the 2004 *New Orleans Building Code* adaptation to the *International Building Code* with applicable foundation amendments. This seminar is scheduled for January 29, 2004 at the University of New Orleans. Future seminars on wind loading and finite element are in the planning stages. Dates and times for these and all other technical seminars can be found on the Branch website www.asceno.org as they become available.

On December 3rd the Structures Committee sponsored a presentation on the design of Liquid Containing Concrete Structures presented by David G. Kittridge, PE. The Structures Committee began the administrative year sponsoring its annual Offshore Seminar held October 9th. The topic was Vortex Induced Vibration Effects on Mooring Systems and it was presented by R. Dale Ramsey, PE and Bala Padmanabhan.

The Geotechnical Committee is currently developing a series of seminars on subsidence.

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SHREVEPORT

By C. Eric Hudson, PE, President

The Branch will be hosting the Section's 2004 Annual Spring Meeting and Conference on March 18th and 19th. Please mark your calendar now! If you plan to attend, please complete the registration form provided in this issue and return it with your registration fee as soon as possible to take advantage of the fee discount.

It is expected that the conference will host approximately 100 civil engineers and students from throughout Louisiana. On behalf of the Section, I would like to extend an opportunity to your company to support this event by either being a sponsor or providing a display in the exhibit hall during the conference. The name of participating companies will be prominently displayed throughout the conference venue. Should you be interested in being a sponsor or an exhibitor, please complete the accompanying form and return it by February 28, 2004. For more information, please feel free to contact Eric Hudson at (318) 222-2600 or ehudson@fenner-consulting.net.

At the end of January, I will attend the Louisiana Tech University Student Chapter Winter Banquet to present two $500 scholarships on behalf of the Branch. They will be awarded to deserving civil engineering students — one to a junior and the other a senior. These scholarships are made possible through the net proceeds from the Branch-sponsored golf tournament held in May.

Our January Branch membership meeting will be a joint meeting with the Shreveport Chapter of the Louisiana Engineering Society. Butch Ford, PE, Bossier Parish Engineer, has requested that we organize a presentation on installing PVC drainage pipe according to the Louisiana DOTD specifications. This presentation will be given by a representative of Contech and it should be very educational.

The November Branch membership meeting held in the Petroleum Club was well attended. Wes Wyche and Steve Williams, with City of Shreveport, gave an informative presentation on the revisions to the City's erosion control ordinances and its Storm Water Pollution Prevention Plans. As we all learned during this meeting, Storm Water Pollution Prevention Plans have become very detailed and complex. This presentation was very helpful to me as a consultant attempting to keep up with the ever-changing regulations of the local, state and federal agencies. Let's face the facts — the days of calling for silt fence and hay bales in a general note on the drainage plan are over in today's more environmentally conscious world.

Editor's Note: The article that appears in this issue titled "A technology-based economy for North Louisiana" was contributed through the Shreveport Branch and would normally be included in this section — News from the Branches. However, because of its general interest and statewide ramifications it was placed in the Section News and Information section.

Sponsor / Exhibitor Registration Form
2004 Annual Spring Meeting and Conference
March 18 - 19, 2004
Sheraton Shreveport Hotel • Shreveport, Louisiana

Sponsorship Type*	Number	Cost	Sub-total
Gold	___	@$400.00 =	$_____
Silver	___	@$250.00 =	$_____
Bronze	___	@$150.00 =	$_____
Exhibitor*			
Exhibit Space	___	@$300.00 =	$_____

Total Fee Remitted: $_____

The standard exhibit space is an 8' × 10' area that includes a 6' skirted table, 2 chairs and a trash can. It is available to the exhibitor for both days of the conference.

Do you need electrical hookups? Yes ___ No ___
Are you interested in contributing a door prize? Yes ___ No ___

*Sponsors and Exhibitors will receive a complementary admission for one to attend the Thursday luncheon and awards banquet. Must RSVP to receive tickets.

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Please mail form with payment to: ASCE - Shreveport Branch
P. O. Box 3994
Shreveport, LA 71133

– Observations –

Ethics:

With the failure of Enron one of the implicated players in the sorry history that led to its financial collapse is the accounting firm Arthur Anderson. It is alleged to have served as Enron's accountant to provide an independent peer review of its accounting procedures that should have foretold and maybe curbed Enron's inappropriate behavior that led to what may have been its intentional demise in the early stages. Unfortunately, Arthur Anderson served Enron in the additional capacity of consultant. The resulting relationship is alleged to have created a "...coziness that reeked of conflict of interest and surely helped produce Enron account books that should have been filed under 'fiction' never reporting a single bad quarter before" the collapse.

Close but not too close seems to be a possible key to avoid conflict of interest in a professional relationship. Close enough to have a good working relationship with the client but not so close that the relationship corrupts the very character of the primary service or business relationship. Considering the ongoing trend of municipalities burying the engineering services under layers of political hacks that make the engineering decisions or at least insulate the elected officials from exposure to the engineering issues and leadership in the public works departments may be an example of the other extreme in the relationship — not close enough. - *Editor*

Design:

In the strange turn of events that led to and included the events of 9/11 gives the building profession pause to rethink or at least think about the structures that make high profile artistic and/or cultural statements. The intention of unusual buildings such as the World Trade Center towers, the Sears Tower, the Pentagon and the Empire State Building; and large bridges like the Golden Gate, the Verrazano Narrows and the Sunshine Skyway to make artistic and cultural statements is as much if not more the point than whether they are within conventional or practical structural limits. Such high profile artistic and cultural statements that represent capitalism; national, state or civic pride; military prowess; etc. now have become natural targets of terrorists in a culture motivated by ignorance, envy and a misguided sense of morality that are the antithesis of western culture. Acts of terrorism committed against these most valued statements of the enemy culture are apparently their own statement. The public's safety that is the building profession's obligation to serve and safeguard in the context of safe facilities may not be well served by a facility that makes a high profile statement and in doing so becomes more susceptible to terrorist attack. - *Editor*

Southern Welcomes President-Elect Bill Henry

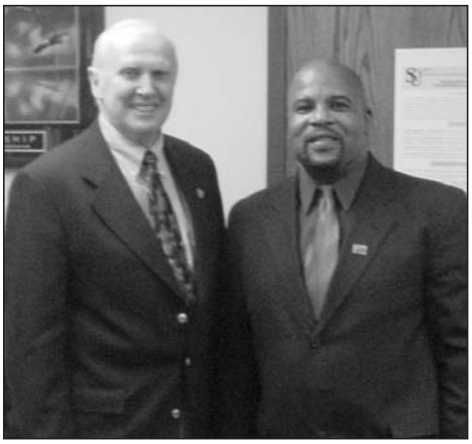
"It's great to be a civil engineer" were the opening words of ASCE President-Elect William "Bill" Henry, PE, as he greeted the Southern University students and faculty on January 22nd. The gathering was the chapter's kickoff meeting for the Spring 2004 semester.

During his talk, Henry discussed the various roles that civil engineers typically take in society — technical design specialists, managers, educators and constructors — and defined skills that are imperative to each of the roles mentioned. He stressed the importance of ethics and the role of the faculty in educating students regarding their responsibilities and duties as engineering professionals.

In closing, Henry emphasized the importance of involvement in the community and in government affairs. He suggested that when the student chapter plans activities, it should also plan the publicity and carry out both, adding that, "You deserve it and the profession needs it." For the most part, the public has a high regard for the engineering profession though they often do not know what engineers do. Positive publicity can change that. Henry then suggested that engineers look at their college diploma and notice if anything on it allows them to relinquish their responsibility as citizens. With the answer being an obvious no, he continued by stating it is important that engineers become more involved in government, especially in policy positions; however, being careful not to engage in discussions or activities that would violate their ethical practice.

"It's great to be a civil engineer," a career that not only encourages, but requires the use of both creativity and intellect. This inspirational talk was a great way for the student chapter to kick off the new year.

ASCE President-Elect Bill Henry speaks to members of Southern Chapter during the kickoff meeting for the semester.



William Henry, PE, visits with Patrick Carriere, PE, Chair, Department of Civil and Environmental Engineering at Southern.

(Continued from Page 8)

They will include

- geologic faulting/coastal erosion
- subsidence inside of protected areas
- subsidence effects on infrastructure and
- subsidence effects on residential construction.

The first seminar on geologic faulting/coastal erosion will be a panel discussion on the topic of coastal land loss. This topic will address the geologic processes that affect levee construction as well as other construction in coastal areas. Currently there are two divergent opinions as to the causes of coastal land loss making it a highly controversial issue that will be presented by Woody Gagliano with Coast Environments and Del Britch with the US Army Corps of Engineers. The panelists will be from the Committee and the affected agencies of interest. This seminar is tentatively scheduled for early February. The subsequent seminars planned on this topic will concentrate on the engineering mechanics of subsidence as opposed to the more global effects of the first presentation.

Other activities

Community outreach activities being planned include a booth at the New Orleans Jazz and Heritage Festival scheduled for late April through early May. It will offer civil engineering-based activities designed to be fun for kids. Our Younger Members Committee will be providing judges and prizes for the Greater New Orleans Science and Engineering Fair. In addition the Board is currently considering plans to sponsor television ads intended to increase public awareness of civil engineers and the civil engineering profession in the Greater New Orleans area.

Our Younger Members Committee hosted several social outings some of which included members of the ASCE student chapters in the Branch. The Committee will be co-hosting the Younger Members Council that is meeting during the Zone II Leadership Conference scheduled to be held in New Orleans in the Astor Crown Plaza Hotel January 23-25, 2004.

TEA21 reauthorization

The New Orleans Branch assisted national organization with developing a panel discussion titled "America's Infrastructure: Rebuilding Our Economic Backbone." The panel will include Section members, Blaise M. Carrierre, PE, Deputy Secretary Louisiana Department of Transportation and Development, and William H. Sewell, Jr., PE, Deputy Director of New Orleans Department of Public Works. The US Congress is wrestling with the reauthorization of the Transportation Equity Act for the 21st Century as our deteriorating surface transportation systems continue to unnecessarily cost American communities millions of dollars. This legislation will decide the gross amount and the apportionment of the billions of federal dollars that will be earmarked for transportation infrastructure in the various states. The panel will discuss pressing infrastructure needs with an emphasis on surface transportation and what this means for Louisiana and New Orleans in particular. This seminar will be held in conjunction with the Zone II Leadership Conference on Friday, January 23, 2004 from 1:00 pm to 3:00 pm.

Information on all Branch activities can be found on its website that is also conveniently set up to allow online registration for the announced seminars and conferences.

Highlights of the November Board of Directors meeting

The ASCE staff person in charge of deciding the competitiveness of the requests for State Public and Government Affairs Grants is Brian Pallasch, Director of Government Relations. Based on the discussions with him during the ASCE Civil Engineering Conference and Exhibition (National Conference), it would appear that proposed government relations programs will be given some precedence over proposed public outreach programs that have been the principal interest of the Section and its grant requests in the past. The branches submitting requests for grants in the future should not be deterred from pursuing their interests in public outreach but they should also understand ASCE's preference for government relations programs and how this may affect the viability of their proposal. The State Public and Government Affairs Grants are due to ASCE by December 1, 2003. There will be some small forgiveness on the deadline if advanced notice of the late arrival is provided.

The Louisiana Section founded in 1914 — see the Section seal of the cover of this journal — was reminded by letter from Nancy Berson, the ASCE Director of Geographic Services, of its approaching 90th anniversary and the opportunity to celebrate such things as past achievements and those responsible for them. She also suggested that it is also a time to focus attention on the Section's present status and future goals and the plans to reach them.

The Louisiana Engineering Society solicited funds from the Section to help cover its cost to host an inauguration celebration planned by the National Society of Professional Engineers during its Annual Meeting scheduled for July 2004 in Hawaii. Bobby E. Price, PE, a past president of the Section and of the LES, is the President-Elect of the NSPE and will be installed as its president during the forthcoming meeting. Since the Section did not solicit LES for funds to cover its costs of hosting the recent celebration of the installation of Thomas L. Jackson, PE, when he ascended to the presidency of the ASCE, it was debated whether the Section should contribute to this function. Since the Section has expended significant resources in recent years to fund activities that are not typically recurring, it was decided that the Section would not contribute in the event if the LES was otherwise able to meet its funding goals. If not, the Board would further consider a donation.

There were several issues concerning the newly formed ASCE technical institutes discussed during the District 14 meeting. Though the Society has been completely forgiving concerning the inability of some institutes to become financially independent in a specified time frame, the intent was expressed without any specific plan in place to sunset the technical institutes that do not become financially independent in the specified time frame. While the "unprofitable" institutes have been a drain on the Society's strained budget funding competing for higher priorities, the surplus funds from the "profitable" institutes have been "absorbed" into the Society's general funds. This may explain the motive for the strong national support for the institutes to share in the governance of the ASCE in compensation for the loss of their surplus funds.

There is a national membership satisfaction survey being conducted that appears to ineffectively address some of the significant issues it attempts to broach such as those concerning the institutes and the perceived value of the services they provide. There is concern that the national conferences they sponsor serve a very limited and narrow audience as opposed to the audience served as part of branch and section technical committee-sponsored seminars.

The ASCE national remains strongly committed and on course to develop and promote the extended and advanced educational requirements for licensure as a civil engineer according to its Policy Statement 465. The basic concepts in the Policy are filtering into the National Council of Examiners for Engineering and Surveying future goals. This effort is proceeding as if there is a total disconnect between the national Society leadership and its grassroots membership that is consistently expressing a general negative attitude toward — and opposition to — the Policy.

Another particular concern about the development concerning Policy Statement 465 is the direction the proposed advanced curriculum is taking. It is being loaded with soft skills that are not part of the experience of those who would likely teach them and that are most effectively taught and learned in the workplace environment where they are applied — not the classroom. The soft skills are added to the detriment of providing the seriously needed technological skills that are not being provided or demonstrated by current graduate engineers. There is concern that the civil engineering profession does not need more touchy-feely, but technologically competent graduates.

The same sense of this disconnect between the ASCE and its grassroots membership was again demonstrated during the ASCE National Conference. The time scheduled on the agenda for feedback from the sections and branches was reduced because of the additional time spent by the national leadership expressing its objectives and opinions and leaving effectively no time for feedback. Upon complaints from some of the section and branch leadership in attendance, they were invited to stay late to provide their feedback. Unfortunately, at the end of the day, many of the attendees did not stay to participate and did not get a chance to hear the questions and concerns that were brought to the table by the section and branch leaders who stayed.

The national governance proposal in general may be workable and achieve the goal of reducing the number of representatives on the Board. There remains serious sticking points concerning the unknown implementation issues. The two voting institute members are believed by some to be an anomaly to the concept of representative government.

The two directors at-large represent no one — certainly not the grassroots membership who supposedly elects them. The method of their nomination may be a crucial issue to legitimate democratic representation. The nominations of the directors at-large can be finessed to further disconnect the national organization from its grassroots membership and promote its independence. They can be limited to those who hold the rarefied political views formulated and held by a small cadre of national leaders.

At this time it is understood that the intent of the directors at-large is to provide for those members of ASCE who have worked tirelessly for the organization, but were unable to come up through the ranks because of frequent relocations or other situations which prevent them from becoming involved at the local, section and the district level. Another thought is to set aside one of the positions for a younger member who may not normally have had enough time and experience to participate effectively on the national board but may also have much to contribute.

The proposed regional boards of governors that would replace the zones and districts should work quite well. Again, with no details worked out beyond the goodwill of the large and small sections that may be merged into a region, there is good reason for optimism on this part of the proposal based on our experience with the current zone and district governance.

The Board, other Section leaders and the membership, particularly through branch membership meetings, should be strongly encouraged to read the ASCE national governance proposal for themselves. It is available on the ASCE national website. The governance proposal was adopted by the ASCE Board of Direction and will be submitted to a constitutional election of the membership. The Zone II delegation that includes District 14 and the Section voted as a block against the proposal.

It was announced that the ASCE is promoting a program called *Men/Women at Work.* It is intended to target congressmen for ASCE members to contact with information about how critical the reauthorization of TEA21 is. They can be provided postcards already addressed to anyone from the President, down to a state representative. The postcards come in two formats: either *Men at Work or Women at Work.* This was deemed an effective way to encourage the reauthorization.

The next Section Board meeting is scheduled to be in Ruston January 21, 2004 in conjunction with the Louisiana Tech University ASCE Student Chapter Annual Awards Banquet. Board

(Continued on Page 15)

Registration Form
2004 Annual Spring Meeting and Conference
March 18 - 19, 2004
Sheraton Shreveport Hotel • Shreveport, Louisiana

Registration Fees*	Number	Cost	Sub-total
Registration Fee by March 1	____	@ $100.00	$ _____
Registration Fee after March 1	____	@ $120.00	$ _____
Registration Fee - Non Member by March 1	____	@ $130.00	$ _____
Registration Fee - Non Member after March 1	____	@ $150.00	$ _____
Registration Fee - Student	____	@ $ 10.00	$ _____
Thursday Luncheon			
Conference registrant	____	Free	
Not registered for conference	____	@ $ 15.00	$ _____
Student not registered for conference	____	@ $ 7.50	$ _____
Thursday Awards Banquet			
General Admission	____	@ $ 35.00	$ _____
Life Member honoree and a guest	____	Free	
Award recipient and a guest	____	Free	
Student Admission	____	@ $ 15.00	$ _____
		Total Fee Remitted:	$ _____

Award Banquet Entree Choices: ____ Prime Rib of Beef Au Jus ____ Chicken Crevette

* Registration fee includes Thursday Luncheon and admission to the exhibits and technical sessions.

Name: _____ Branch: _____

Spouse's Name (if attending Banquet or a Luncheon) _____

Company Name: _____ ASCE Member No. _____

Address: _____ City, State, Zip: _____

Telephone: _____ Facsimile: _____ E-mail: _____

Please make checks payable to: **ASCE - Shreveport Branch**

Mail form with payment to: ASCE - 2004 Conference
P. O. Box 3994
Shreveport, LA 71133

Registration and additional information contact Eric Hudson, PE, by telephone at (318) 222-2600 or by e-mail at ehudson@fennerconsulting.net. To register by facsimile, send attention to Eric Hudson, PE, at (318) 222-2650.

Hotel accommodations: Sheraton Shreveport Hotel, 1419 East 70th Street, Shreveport, Louisiana 71105. For overnight accommodations, call the Sheraton Shreveport Hotel at (800) 321-4182. A special conference group rate of $88.00 per room is available until February 25, 2004.

Conference Agenda (Tentative)
2004 Annual Spring Meeting and Conference
March 18 - 19, 2004
Shreveport, Louisiana

Conference Agenda Thursday, March 18, 2004		
Time	**Technical Session 1**	**Technical Session 2**
7:30 am - 8:30 am	Conference Registration in the Foyer	
Location	Broadmoor Room	Highland Room
Moderator	Joe E. (Butch) Ford, PE	Ali M. Mustapha, PE
9:00 am - 9:50 am	***Centrifugal Pump Sizing*** *Steve Ard* *Delta Process Equipment, Inc.*	***Asphalt Paving Reinforcement and Drainage*** *Bill Gonzalez* *Contech*
9:50 am - 10:10 am	**Break in the Exhibit Hall Area - Youree Room**	
10:10 am - 11:00 am	***Choosing the Right Control Valve - Part 1*** *Frank Smith, III, President* *Pipe Tech, Inc.*	***Bridge Design*** ***Prestressed and Pecast Concrete in Louisiana*** *Aziz Saber, PE, Professor* *Louisiana Tech University*
11:10 am - 12:00 noon	***Choosing the Right Control Valve - Part 2*** *Frank Smith, III, President* *Pipe Tech, Inc.*	***Stormwater Session and Vortechs System*** *Amy E. Anzelc* *Vortechnics, Inc.*
12:00 noon - 1:30 pm	**Luncheon - S. Bruce Easterly, PE, Keynote Speaker**	
Moderator	Barbara E. Featherston, PE	Reginald D. (Reggie) Lewis
1:30 pm - 2:20 pm	***Trenchless Technology*** *Jadranka Simicevic* *Louisiana Tech University*	***Ethics*** *Norma Jean Mattei, PE, Professor* *University of New Orleans*
2:20 pm - 3:00 pm	**Break in the Exhibit Hall Area - Youree Room**	
3:00 pm - 3:50 pm	***Geopier Soil Reinforcement System*** *Aaron J. Gaul* *Geopier Foundation Company*	***Life Safety Code - Part 1*** *W. K. Matlock* *State Fire Marshal Office*
4:00 pm - 4:50 pm	***Reinforced Concrete Pipe - The Engineering Benchmark in Stormdrain Applications*** *Steve Nilforoushan* *Rinker Materials*	***Life Safety Code - Part 2*** *W. K. Matlock* *State Fire Marshal Office*
6:30 pm - 9:30 pm	**Awards Banquet & Presentation of Life Membership Certificates - Spring Lake Room**	
Conference Agenda Friday, March 19, 2004		
7:00 am - 7:50 am	**Section Board Meeting in Conference Room 106**	
7:30 am - 8:30 am	Conference Registration in the Foyer	
Time	**Technical Session 1**	**Technical Session 2**
Location	Broadmoor Room	Highland Room
Moderator	Kurt M. Nixon, PE	C. Eric Hudson, PE
8:00 am - 8:50 am	***Asphalt Concrete Pavement*** *Alan Cooley* *Louisiana Asphalt Pavement Association*	***Current Trends in Slab-on-Grade Design*** *Rolfe Jennings* *Concrete Reinforcing Steel Institute*
9:00 am - 9:50 am	***Waste Treatment at Grand Prairie Rest Area in Louisiana*** *Dixie M. Griffin, Jr., PE, Professor* *Louisiana Tech University*	***Design and Jointing of Concrete Pavement*** *Rolfe Jennings* *Concrete Reinforcing Steel Institute*
9:50 am - 10:15 am	**Break in the Exhibit Hall Area - Youree Room**	
10:15 am - 11:45 am	**Section General Membership Meeting & Drawing for Door Prizes in the Broadmoor Room**	

A technology-based economy for North Louisiana

by Leslie K. Guice, PE and Jon D. Pratt

The rules for competition have seen significant changes in recent years. At one time, the success of a company could be reasonably assured as long as it made continuous incremental improvements. However, major advances in information technology, communications systems, and other technologies have significantly changed the business environment and thereby the rules for competition.

In today's economy, the major threat to a company or even an entire industry may not be from a competitor that does something a little better, but from a competitor not previously thought of as such that does that something totally different. An example is the threat to the regional telecommunications companies from companies involved in wireless technologies and internet communications. There are threats to regional automobile dealers and local bookstores from the *dot-coms* that recently emerged to become major economic powers. This illustrates that every company must consider emerging competition from outside of the traditional sources that are normally defined by a region and by a traditional industry.

Indeed, global competition has emerged in all sectors of the economy, including some areas never envisioned as competition a decade ago. For example, the worldwide access to cheap skilled labor in Asia enabled by internet communications is emerging as a significant threat to the providers of engineering services — even in the North Louisiana region.

Similarly, the availability of this technology has also created new growth opportunities for the companies in our region. It allows the companies in our region to compete in markets from which they were once isolated. This E-commerce enables small companies to make products available to a global market. As long as a company has access to the internet, it can provide goods and services worldwide such that with appropriate business and technical savvy, a small company in rural North Louisiana can develop into a high-growth enterprise.

Considering these changes in the landscape of competition, a broader culture of *innovation* is needed and must be created for the North Louisiana region to thrive. Innovation is more than creativity or the generation of new knowledge. It is the transformation of that creativity and knowledge into something of *value* such as a business with a commercially viable product.

To be at the forefront of their competition, companies must be aware of both the market needs and their inherent ability to innovate in ways that can result in a competitive leap forward and not just an incremental advancement. Companies in our region must emulate those across the United States that have placed innovation at the top of their core competence requirements. The Silicon Valley-based design firm IDEO — the developer of innovative products such as Apple's mouse and Palm's handheld — has developed a highly effective process for innovation. As a result, it has been consulted by hundreds of clients seeking to institutionalize innovation as a key part of their corporate culture. To facilitate a broader culture of innovation, the IDEO's process for innovation is now being taught at Louisiana Tech.

Through its Master Plan for Economic Development — *Louisiana: Vision 2020* — the state of Louisiana has developed a platform for innovation and economic growth. The core of this master plan is the recognition of the importance of the *learning* enterprise as the first essential element of innovation. The plan also identifies *technology* as the driving force behind the growth and diversification of our economy.

The essential role of colleges and universities as a catalyst in both learning and technology development has been demonstrated in numerous regions of the country. Most are familiar with the synergistic interaction between universities and industry that led to strong economic growth in North Carolina, Silicon Valley and Austin. This interaction is being replicated in other less well-known regions such as Idaho, upper New York state, Phoenix and now in Ruston!

Over the past several years Louisiana Tech has been putting the *Vision 2020* plan into action with efforts to stimulate technology-based economic development in Louisiana and more particularly in the North Louisiana region. At the core of this effort is the Center for Entrepreneurship and Information Technology (CEnIT) — a cross-disciplinary center — established by Louisiana Tech 3 years ago. It has since been approved by the Louisiana Board of Regents. It consists of a staff with expertise in

Louisiana Tech students developing innovative products in the CEnIT Innovation Lab.

- engineering
- science
- finance
- entrepreneurship
- economics, and
- information technology.

Through the development of new curricula, acquisition and distribution of research funding, and promotion of entrepreneurship among faculty, students and external partners, CEnIT has facilitated an environment where creativity and knowledge can be transformed into something of value — innovation.

The CEnIT staff assists students, faculty and those in the community who are establishing or enhancing businesses. It works closely with researchers in micromanufacturing, biomedical engineering and other areas to assist in the transformation of new knowledge and technologies into commercially viable products that can produce new high-quality jobs and economic growth for the region. These enabling efforts by Louisiana Tech and the CEnIT can provide a competitive advantage to the development of the economy in the North Louisiana region.

Leslie K. Guice, PE, is Dean of the College of Engineering and Science and the Director of the Center for Entrepreneurship and Information Technology at Louisiana Tech University. Jon D. Pratt is Assistant Professor of Finance - Research and the Assistant Director of the Center for Entrepreneurship and Information Technology at Louisiana Tech University.

- Career Benchmarks -

Section members **Paul F. Crigler,** PE, **Richard C. Entwisle,** PE, **Jason G. Rachal,** PE, and **Brian M. Ronkartz,** PE, recently earned their civil and/or environmental engineering license in Louisiana. If you are in contact with any of these engineers, please offer them your congratulations on their accomplishment.

Louisiana residents **Robert G. Bice, II,** PE, **Jody J. Colvin,** PE, **James E. Lyles, Jr.,** PE, **Meredith M. Moe,** PE, **Michael L. Pugh, Jr.,** PE, **Benjamin C. Rauschenbach,** PE, **Laura M. Riggs,** PE, and **Charles W. Stahr,** 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.

Times-Picayune reporters win award

Times-Picayune 11/15/03:

A series of stories on the potential for catastrophic losses that hurricanes can have on Louisiana garnered a national award from the ASCE for *Times-Picayune* reporters Mark Schleifstein and John McQuaid. Through the nomination of their work by the New Orleans Branch, they received the national 2003 *Excellence in Journalism Award* at the ASCE annual 2003 Civil Engineering Conference and Exposition held in Nashville, Tennessee.

The 5-day series of articles titled, "Washing away: How south Louisiana is growing more vulnerable to a catastrophic hurricane," was published June 23-27, 2002. Thomas L. Jackson, PE, President of the ASCE, acknowledged that "Their comprehensive reporting and unbiased analysis provided a thorough and accurate picture of the engineering and environmental issues that are a part of our nation's flood-control systems."

New professional degree

The Louisiana DOTD continues to work with a consortium of Louisiana universities to develop a master of civil engineering professional degree program. The goal is to pool the resources of the graduate civil engineering programs at these universities and offer a degree program on a statewide basis that is easily available and accessible to practicing engineers. Although most of the participating institutions have yet to complete their arrangements for this program, the DOTD and Tulane University have jointly announced (12/5/03) a partial startup of the program of study through Tulane University.

The Tulane University Department of Civil and Environmental Engineering is now prepared to offer the new graduate degree program that provides a unique opportunity for practicing engineers to earn an advanced degree.

- The *Master of Civil Engineering Professional Degree* program requires 24 hours of course work and 6 hours of practicum to be completed on an extended part-time basis.
- Students can choose one of five areas of emphasis — environmental, geotechnical, materials, structural and transportation. The option of a tailored curriculum is also permitted.
- Graduate courses will be offered during evening hours in New Orleans and Baton Rouge beginning Spring 2004 with plans to expand to other metropolitan areas in the future.
- A 65 percent tuition waiver is offered to all practicing engineers enrolled in the program who are employed by a local, state or federal government agency or by private industry. Their employers are encouraged to further underwrite a portion of their reduced tuition costs.

For more information about the program including admission requirements, course offerings, tuition and fees, contact Vijaya K. "VJ" Gopu, PE, Chairman, Civil and Environmental Engineering Department, 206 Blessey Hall, Tulane University, New Orleans, LA 70811, telephone number: 504-865-5779, facsimile number: 504-862-8941, and email: vgopu@tulane.edu.

(Continued from Page 11)

members were encouraged to attend this meeting and the banquet and ceremonies that follow. The ASCE President-Elect, William P. Henry, PE, is scheduled to be present during the Board meeting to discuss national issues with the Board.

The Section President and the branch presidents were solicited to write letters to Governor-Elect Blanco, recommending that she consider appointing a licensed civil engineer as the Secretary of the Department of Transportation and Development. The letter should provide compelling reasons for limiting this appointment to a civil engineer. This must be done expeditiously for her consideration during the staffing considerations and decisions for executive branch made during the transition peroid that is now in full swing. It was noted that there were currently two candidates being considered for the position, neither of whom are engineers — much less civil engineers.

Other business transacted:

- The Section is now actively seeking a Chair for the Younger Member Committee to be responsible for managing its responsibilities such as organizing and judging the Daniel Mead Paper contest.
- The Section was advised that it is responsible for nominating the District 14 Council Vice Chair. Timothy M. Ruppert, PE, a member of the Section's delegation to the Council, agreed to serve as its Vice Chair if elected, and the Board acted to nominate him.

Book review

Monday Morning Leadership
by David Cottrell
Copyright 2002 by CornerStone Leadership Institute

Described in the subtitle as 8 mentoring sessions you can't afford to miss, *Monday Morning Leadership* is an excellent and well-focused presentation of several direct actions that that a practicing manager must either confirm or take to become more effective. The obvious is acknowledged in the text that nothing new is provided in the advice offered. If you are a management or a self-improvement junkie, you know this is generally true. It has all been done, said and thought of before, if not for years, for centuries.

The important gift in this book is that its message is concentrated in 112 pages in a few words that are simple, forceful and in direct terms. It allows the manager to simply assess past performance and confirm or devise well-advised decisions in the present and the future.

❖ Quote ❖

Congestion:...There is little agreement about what congestion is, how it can be appropriately measured, how much is tolerable ... and how to characterize the duration and extent... Congestion imposes severe costs in the form of traffic delays,... in-transit inventory costs, production interruptions ,... lost time for ... personnel, wasted time to schedule... for traffic uncertainties, wasted fuel, and environmental damage... Rough estimates place them at several $100 billion per year in the United States. The delays and uncertainties... erode the advantages of just-in-time delivery systems and add to consumer costs. Growing congestion is damaging transport efficiency and threatens to erode national economic performance.

- Damian J. Kulash
President and CEO
Eno Transportation Foundation

— Calendar of Events —

March 18-19, 2004	**Section Annual Spring Meeting and Conference in Shreveport.**
March 25-27, 2004	**Deep South Conference of ASCE Student Chapters hosted by the University of Mississippi ASCE Student chapter in Oxford, Mississippi. See www.olemiss.edu/orgs/asce/conference/ for more information and registration**
September 9-10, 2004	**Louisiana Civil Engineering Conference and Show in Kenner**
September 10, 2004	**Section Annual Meeting in New Orleans.**

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

Editor's Journal

By James C. Porter, PE

How green are you

A two-part article appeared in August and September 2001 issues of *Structural Engineer* magazine about green construction. It identifies basic behaviors that I believe should exist and be accentuated in all civil engineering works if our profession is to advance and serve mankind as it should. Here are some highlights:

Green construction or environmentally responsible design suggests effective use of energy, materials and other resources. Sustainable development takes green construction forward more as a component issue of planned obsolescence with the benevolent twist of using resources in a way that will not inhibit the next generation's ability to use or reuse them for the same purposes. Sustainable development is the wiser use of resources with more discipline and diligence. Green construction and sustainable development should not be necessarily associated with higher construction costs.

Effectively using energy, material and resources requires more front-end investment of engineering and interdisciplinary effort applying the 4 Rs:

- reduce
- recycle
- reuse and
- rethink

while practicing the 3 Cs:

- communication
- coordination and
- collaboration.

The conventional practice to reduce the amount of material in structures by effectively configuring structures and proportioning elements usually results in lower costs. In the renovation of existing structures and the construction of new ones, the ability to recycle (refurbish) and reuse material from old buildings can save enormous costs in tipping fees for the disposal of the same, and in material and energy consumption to provide new materials, and eliminate the generation of tons of solid waste.

To design an environmentally responsible building in a financially responsible way requires one to rethink or think outside of the box of the more conventional approaches. Such designs result in long term cost savings through reduced energy costs and a work environment increasing worker productivity. The integration of structural, electrical and mechanical systems resulting in creative solutions for the betterment of an entire building are accomplished through effective interdisciplinary communication and collaboration to provide for the effective coordination of their design.

Federal agencies responsible for the management of large inventories of facilities appear to be the primary proponents of the green movement. Agencies such as the Navy, Army Corps of Engineers and the U.S. General Services Administration are motivated to move toward the sustainable design process. This is because they recognize the substantial benefits that will accrue from sustainable development based on their vast experience with long-term ownership of facilities. Their initiative is expected to have a substantial trickle-down effect on the preferences of less sophisticated and experienced owners in government and industry.

To solidify the concept of sustainable design, engineers need to develop measures to quantify the performance of buildings in terms of sustainability. Sustainability defines a paradigm shift away from the disposable to the durable transformation or a benevolent, planned obsolescence of the infrastructure. The economic and environmental benefits gained from the investment in engineering effort expended on the front-end of a sustainable design will far outweigh the drawbacks typically experienced using the more conventional disposable approach to building design and construction.

Update

In the July 2002 issue of the *Christian Science Monitor,* it was reported that green buildings are multiplying in the United States as more property owners seek to conserve energy and reduce heating and cooling costs. Analysts estimate that about $30,000 will be saved in annual utility costs at the new Chicago Center for Green Technology by using such equipment as special thermal windows and sensors that turn lights on only where the skylights do not let in enough natural light. Additionally, its heating and air conditioning costs are kept low by using geothermal heat, in which pipes carry liquids through deep wells beneath an adjoining parking lot to heat or cool it to the earth's temperature, or about 50 degrees.

Today, an estimated 400 buildings are seeking certification from the U.S. Green Building Council (USGBC), which has established a four-level scale for what it terms "Leadership in Energy and Environmental Design." Peter Templeton, a program manager at USGBC notes, "When these buildings are new, they don't smell new. They have a healthier environment so there's less employee absenteeism." The Environmental Protection Agency reports that commercial and residential buildings use roughly 66 percent of the country's electricity. By 2010, an estimated 38 million buildings will be added to the 76 million that already exist.

Professional Obscurity

The news media and the consumers of its product — the news — apparently prefer to principally report and consume tantalizing gossip, scandal, sentimentality and celebrity hyperbole limited mostly to sports and entertainment figures. Are journalists defining the content and character of the news or is its content and character consumer driven? Either way or somewhere in between, it is a significant statement about the news and its value to society being heavily focused on the entertainment end rather than on the information end of the news spectrum.

Senior Media Relations Officer, Randy Atkins, with the National Academy of Engineering tells the sad tale (Engineering Times, May 2000) about attempting unsuccessfully to get news media coverage of MIT professor, Robert Longer, the recipient of the NAE Draper Prize. Longer's recognition was for his break-through discovery of the engineering principles in bio-medical engineering. It spawned a $20 billion industry for the effective delivery of chemotherapy to victims of brain cancer and the discovery offers promise in providing other medical treatments.

Atkins found the media indifferent to his overtures. The Draper Prize, Atkins' efforts and its recipient were perceived by the media as a self-promotional ploy unworthy of news coverage. Maybe it is! If this is a self-promotional ploy, how does it compare to the hard news coverage of celebrity hyperbole in sports and entertainment? I suspect that we engineers who pride ourselves in being pragmatists should easily understand the news media's need to keep one eye on the bottom line and the other on its own biases when reporting the news.

I have to ask, is attempting to gain media coverage or public attention for an individual engineer in this way self-promotional for the individual or the profession? If it really is, just how crass would it have been perceived if it had been reported as news? Would this have done more harm than the good that was intended? Though more subtle, this reminds me of the same ambivalent feeling I get when a component of the ASCE voices enthusiastic public support of a tax for public works projects that is being openly debated. No matter how worthy the subject public works may be, the conflict of interest — the profits and salaries to be made by civil engineers — are obvious to all but the most naive. These are things that I would hope — if anyone notices — will not be perceived as self-promotional.

(Continued from Page 4)

reduced, but there will be two new representatives from the institutes and one new representative at-large for which there is no word yet on exactly how that position will be appointed?... nominated?... elected?...

So what do all of these political hijinks mean to you and for that matter why should you care? It basically boils down to your voice in national matters. While we have traditionally had very close alliances with the other sections in our District, it has always been important to have someone from Louisiana involved on a regular basis on the national level. With the new proposal I feel that the Section's ability to have a voice in the ASCE national policy will be seriously diminished.

On the other hand, the voice of the newly created institutes will be included. Is this reasonable? Maybe so if you consider that the institutes provide a significant contribution to the ASCE. Again, there is no word yet on how these positions will be appointed?... nominated?... elected? Is that double your vote if you are a voting member of an institute and your region? Seems like it to me. Is it reasonable that the institutes should get two of the 17 votes on the National Board? That will be up to you to decide.

I am pleased to announce that the Section received notification on January 15, 2004 that it has been awarded a $2,100 State Public Affairs Grant. The Acadiana Branch will receive $600 and the New Orleans Branch will receive $1,500 of the Grant. This is a direct result of the initiative and efforts by the respective branch presidents, John E. Bosh, Jr., PE, and Christopher G. Humphreys, PE, in preparing the necessary SPAG applications.

The notice from the SPAG Committee to the Section noted that the Grant approved by the Committee funded the following proposed activities:

- airing commercials about civil engineering on television $500
- supporting the Career Connections Expo for 10th graders $100
- airing commercials about civil engineering on radio $1,500

The Committee did not approve the funding of the proposal submitted by the Acadiana Branch to purchase civil engineering-related books for school libraries. This was due either to the availability of SPAG funds or the project did not fully meet the requirements for a SPAG.

The detailed actions of the Committee will be delivered by letter to the Section with the initial SPAG funds. The submission of the final report by the Section to the SPAG Committee that summarizes how the Grant was spent and how the projects advanced the Section's government and/or public relations goals is required and due by Friday, September 3, 2004, regardless of whether the projects are completed.

(Continued from Page 7)

construction costs and time as opposed to the reduction in settlement. The composite pile had an added 20 to 23-ft long segment consisting of a light gage corrugated cylindrical metal shell that served as a form to be filled with cast in place concrete. The metal shell segment was attached to the butt end of a driven untreated timber pile via a drive shoe as shown in Figure 7 and driven with a mandrel inserted in the metal shell that follows the untreated timber pile. Once driven, the mandrel is extracted from the metal shell that is filled with concrete. The sequence of construction for the composite pile is shown in Figure 8.

(Continued on Page 18)

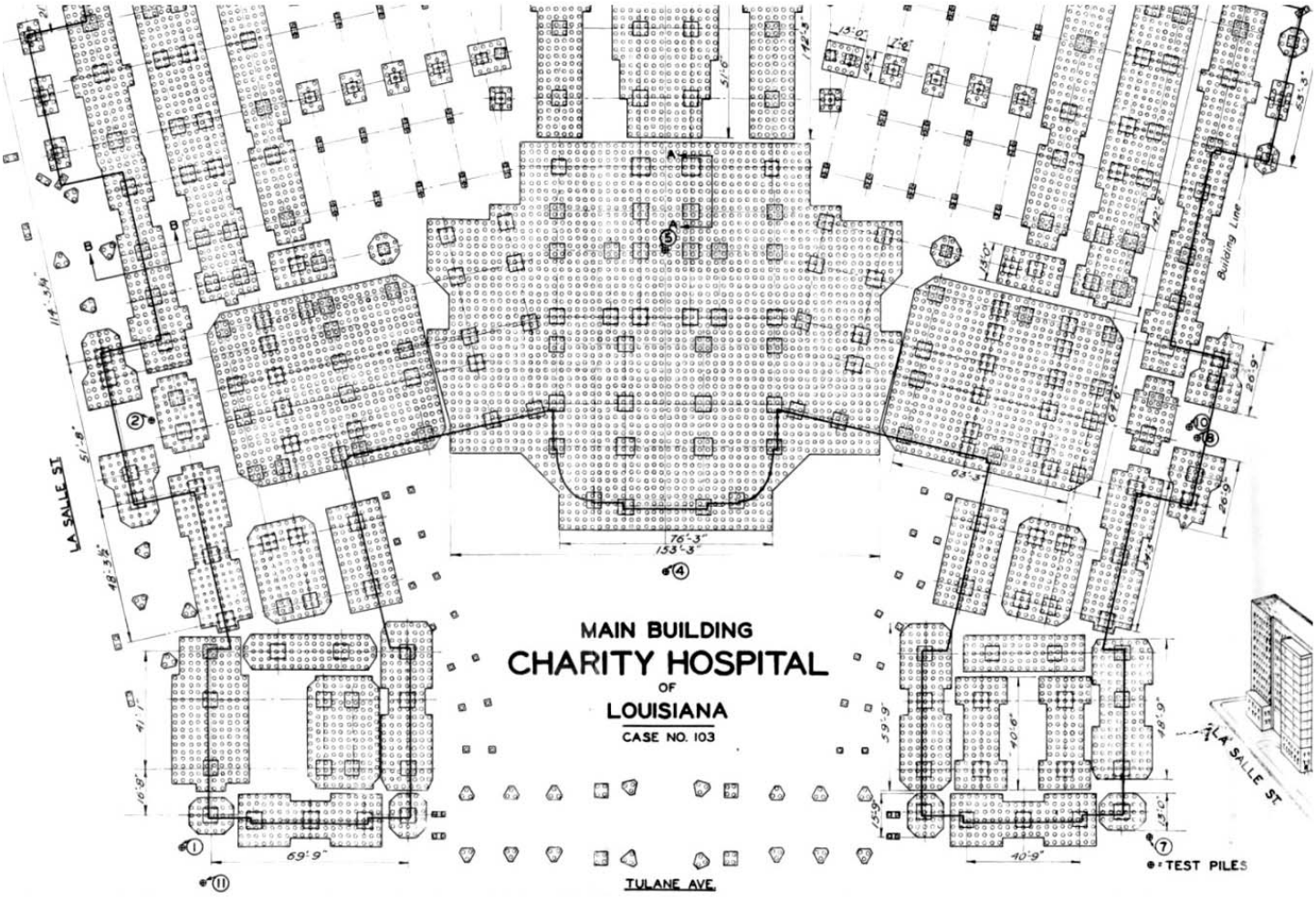


Figure 6. Foundation plan for Charity Hospital (circa 1938).

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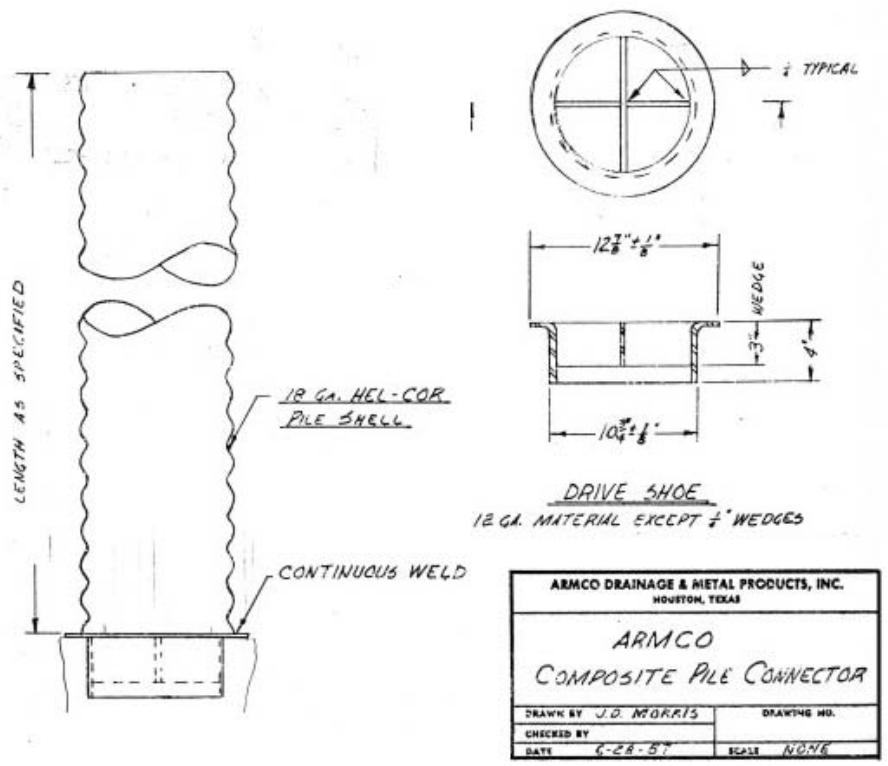

Figure 7. Typical detail for a light gage corrugated cylindrical metal shell welded attachment to a drive shoe and the drive shoe detail to form the top section of a composite pile.

The composite pile extended pile embedment to as much as 90 ft below the existing ground surface. This allowed the driven piles to be seated either in the very dense sand or the pre-compressed clay of the Pleistocene formation transferring the dead loads of the structure into this deeper, less compressible material. The end result was a marked improvement in the capability of timber pile foundations to support major foundation loads with acceptable limits on settlement.

Higher capacity piles with design load capacities of 50 to 100 tons were being used in a limited number of structures where timber pile foundations, if used, were predicted to experience more than an acceptable amount of settlement over a long period of time. These higher capacities were achieved with

- steel pipe piles
- Raymond step taper piles
- steel H-piles, and
- precast prestressed concrete piles.

The Raymond step taper pile was limited to a maximum depth of approximately 120 ft and this would eventually limit its future application. Sections of steel pipe piles and steel H-piles could be welded together during driving operations and provide more flexibility in length. The precast prestressed concrete pile was initially limited by its length. However, the Bruns connector as shown in Figure 9 allowed the joining of two or three pile sections during driving operations to extend embedment to more than 200 ft and well into the Pleistocene.

Although not uniform, the soil conditions in the New Orleans area can be described in a general manner for the purpose of this continuing discussion. Soft to compressible clay soils are encountered to a depth of 50 ft where a thin dense sand stratum is encountered to a depth of 58 ft to 60 ft. This sand stratum is underlain by compressible clays to a depth of 75 ft followed by a medium dense to very dense sand stratum to a depth of 75 ft and 100 ft. This sand stratum is underlain by normally to slightly over consoli-

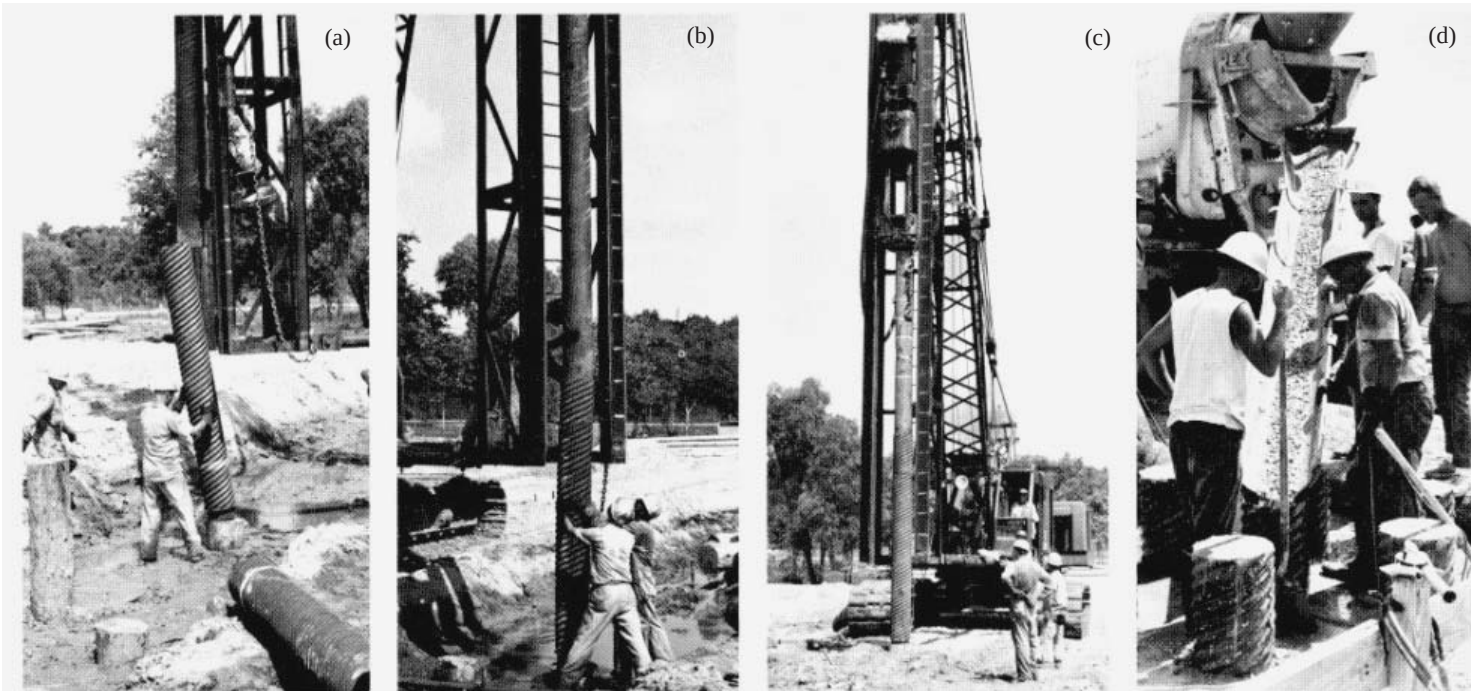

Figure 8. Installation sequence for a composite pile. (a) Metal shell is placed on top of driven timber pile. (b) A close-fitting, heavy pipe mandrel is inserted in the metal shell. (c) The timber pile and metal shell are driven into place with the mandrel bearing on the drive shoe. (d) The mandrel is extracted and the shell is filled with concrete.

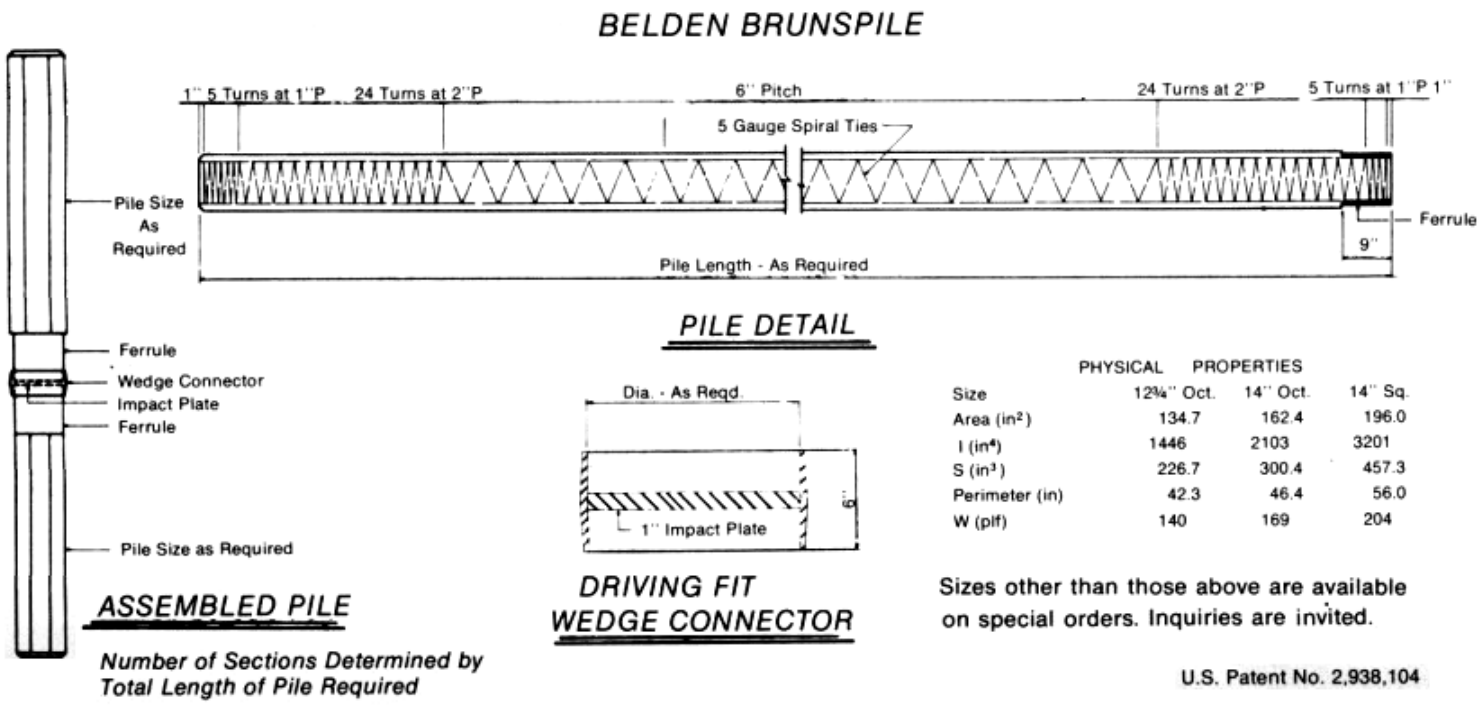

Figure 9. Details of the Belden precast Brunspile and the patented wedge connecter.

dated clays to a depth of 140 ft to 160 ft. This sand stratum replaces the first Pleistocene horizon previously discussed in most downtown areas of New Orleans. The second Pleistocene horizon is encountered at a depth of 140 ft to160 ft and is underlain by the third and fourth Pleistocene horizons as previously discussed.

Plaza Towers

The skyline of the City of New Orleans began to change significantly in the 1960s. The first high rise structure constructed was the Plaza Towers in 1964. It was a 45-story building supported on a mat foundation. Considering the loading conditions, it became apparent that pile lengths in excess of 100 ft would be necessary to minimize settlement and develop the desired design load capacity of 200 tons per pile.

The pile selected for the project was a three-section prestressed concrete Brunspile shown in Figure 9 and manufactured by Belden Concrete Products, Inc. The lower section of the pile had a 12¾" octagonal cross section and the 2 upper sections had a 14" octagonal cross section. The sections were connected butt-to-tip during driving operations with a Brunspile wedge connector also shown in Figure 9 and the pile was driven to a tip embedment of 177 ft below the existing ground surface. The pile sustained a load of 450 tons under load tests but the structural limits of the pile limited the design load capacity to 200 tons per pile using a factor of safety of 2. This was the first application of a major driven multi-section prestressed concrete pile in New Orleans.

Pile breakage became a concern during the initial driving of the permanent job piles. To reduce the potential for pile breakage, greater quality control measures were implemented during manufacture and modified pile driving techniques were developed to install the piles considering the soil conditions encountered at the site. Because of the pile breakage experience with the multi-section precast prestressed concrete pile during the early stages of this project, it was possibly not the model to encourage the future use of multi-section precast prestressed concrete piles. However, the modifications in pile manufacturing and driving techniques developed over the course of the project were successful and successfully used on future projects.

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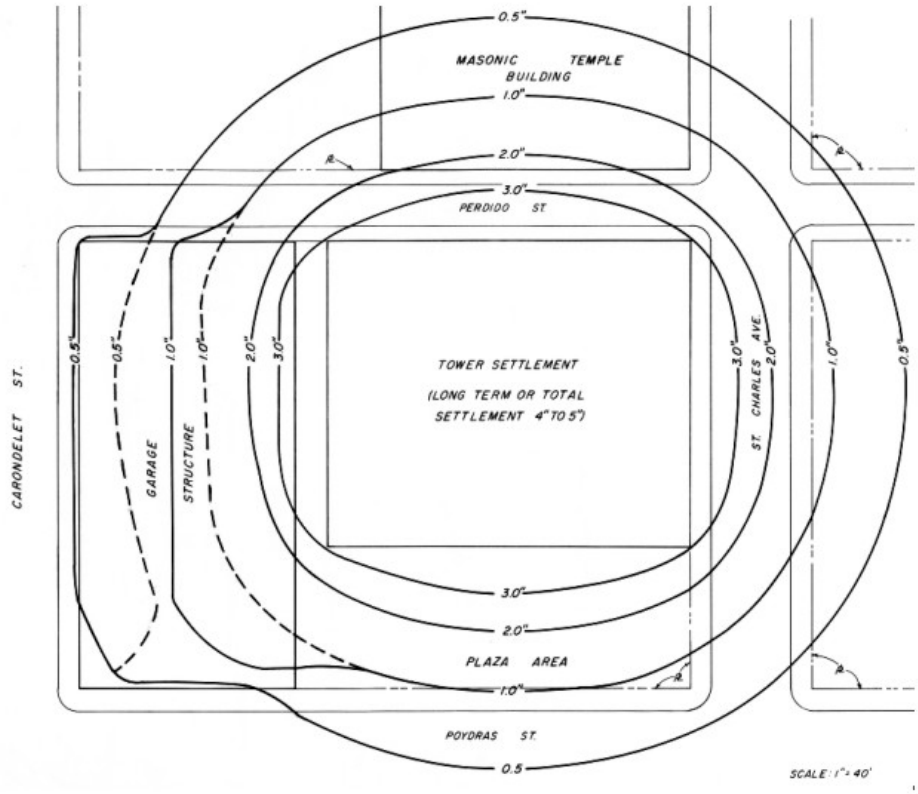

Figure 10. The estimated settlement contour diagram for the One Shell Square tower on — and adjacent to — the construction site.

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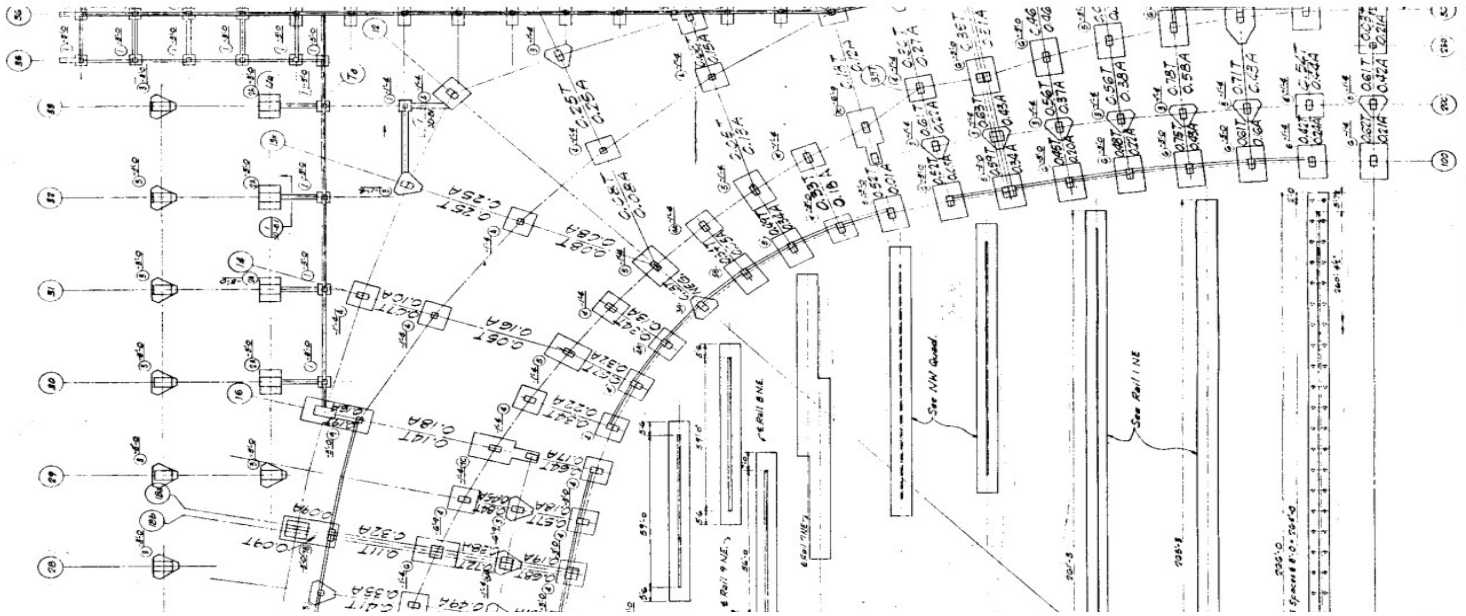

Figure 11. Partial foundation plan for the Superdome showing the column location configuration around the playing field.

Pile research activities

While the Plaza Tower was being constructed, 1010 Common was being designed. Because of the initial performance of the multi-section precast prestressed concrete pile at the Plaza Tower, a 14" steel H-pile was selected to support this structure. At this time, the yield stress of the steel was 36 ksi and the *New Orleans Building Code* limited the design stress to approximately 33 percent of the yield stress. Therefore, the 14" steel H-pile used was severely limited in load carrying capacity. A pile length of 200 ft below the existing ground surface was selected for settlement considerations. However, even though the pile load test provided an ultimate load in excess of 400 tons, the design load was limited to 168 tons per pile.

Recognizing that the steel H-pile was severely handicapped by the *New Orleans Building Code* design criteria, the American Iron and Steel Institute employed Walter E. Blessey, PE, to perform a test pile program. The purpose of this test pile program conducted at the Civic Center site near the corner of Loyola Avenue and Poydras Street using steel piles with a 50 ksi minimum yield strength was to verify that 50 percent of the yield stress could be used safely for the design stress. This test pile program initiated in 1967 included 6 test piles and 4 reaction piles being driven, and 4 soil borings drilled up to 300 ft below the existing ground surface revealing the existence of the typical soil conditions previously described.

One test pile — a 12BP53 steel H-pile — was driven to a tip embedment of 186 ft below the existing ground surface. It sustained an ultimate load of 400 tons and a soil failure was experienced during the attempt to reach 425 tons. The design load was recorded as 200 tons with a factor of safety of 2. The ultimate load of 400 tons produced a pile stress of 25.7 ksi which is approximately 50 percent of the yield stress. Based on this and other load tests performed at the site, the *New Orleans Building Code* was changed to allow the use of a minimum yield stress of up to 50 ksi and a maximum design stress of 50 percent of the yield stress for steel piles.

One Shell Square

One Shell Square became a reality in November 1969. It is a 52-story tower, 686' in height, with a base dimension of 175' × 207'. Adjacent to the tower is a 10-story parking garage having an area of 120' × 240'. A plaza area provides the main entrance to the tower on the corner of St. Charles Avenue and Poydras Street.

Based on preliminary engineering analyses, the structural engineer determined that a mat foundation would be used to support the tower structure. Although the test pile program consisted of 13 piles, only two types of piles were considered for the mat foundation of the tower; the 14" steel H-pile and 18" octagonal Brunspile. These piles were driven to depths varying between 200 ft and 223 ft below the existing ground surface. All of the initial test piles were driven with a Vulcan 80C hammer developing a driving energy of 24,500 foot-pounds per blow. However, because of the extremely hard driving conditions — 100 to 200 blows per foot — encountered during the installation of the first prestressed concrete test pile, an additional precast concrete test pile was driven with a Vulcan 140C hammer developing a driving energy of 36,000 foot-pounds per blow. It provided a driving resistance of 60 blows per ft or less to penetrate to an embedment of 223 ft below the existing ground surface. Based on the results of the load test, the prestressed concrete pile was selected. The test pile sustained a load of 720 tons during the load test indicating a design load capacity of 360 tons. However, its structural limits of the pile limited the design load capacity to 280 tons per pile.

Final settlement analyses were performed to determine not only the settlement of the mat but also its influence on the adjacent parking garage, plaza area, and the Masonic Temple building located across the street from the construction site. Using a dead load pressure intensity of 5,800 psf in Westergaard's influence coefficient, the settlement of the rigid mat of the tower structure was estimated to be 4" to 5". The settlement estimated for the garage structure was 0.5" to 3". For the entrance plaza, it was1" to 3", and for the Masonic Temple building it was 0.5" to 2". The estimated settlement contour diagram for the tower site is shown in Figure 10.

It was decided that the settlement induced by One Shell Square on the Masonic Temple building could be tolerated but that it should be monitored during construction. To minimize the potential differential settlement between the garage and the tower, the same 18" octagonal concrete pile supporting the mat foundation of the tower structure was used in the first row of piles supporting the garage structure and immediately adjacent to the tower. The remainder of the garage structure was supported by 14" square prestressed concrete piles driven to a tip embedment as deep as 150 ft below the existing ground surface. Because of the light loads of the entrance plaza, it was supported by timber piles seated into the sand at 50 ft. It was agreed that the damage to the plaza area because of future settlement would have to be repaired in the future and that this was an acceptable solution.

Settlement records of the tower were maintained for 7 years indicating a total settlement of 7.1" to 7.5" of the mat foundation at two different locations. This compares favorably with the pre-

dicted settlement of 4" to 5" considering that the initial settlement estimates did not include the elastic deformation and creep that occurred in the prestressed concrete piles.

Place St. Charles

Another example of the use of high capacity piles was Place St. Charles that is 50+ stories in height. The column configuration is significantly different from that used in One Shell Square. Place St. Charles has individual heavily loaded exterior columns as well as an interior core area. This core area is supported on a mat approximately 68' × 130' supporting 98,200 kips for a pressure intensity of 11 kips per square foot. The exterior columns had loads varying between 7,200 kips and 22,000 kips. Adjacent to the high rise was a lightly loaded two-story entrance area.

The design engineer immediately determined that the prestressed concrete piles would not provide sufficient design load capacity to support the individual elements and also minimize settlement. Therefore, a 20" diameter, ½" thick wall open-end steel pipe pile was driven to a tip embedment of 238 ft below the existing ground surface into the third Pleistocene horizon. This pile was load tested to failure at 720 tons thus providing a design load capacity of 360 tons per pile using the new allowable stresses provided in the *New Orleans Building Code* that resulted from the aforementioned research.

Settlement analyses using Westergaard's stress distribution methods were performed using computer software that considers all of the individual loads to estimate their cumulative effect on individual soil strata. The final settlements estimated are 3.5" to 4.5" for the center core area, 2.5" to 3.5" for the exterior heavily loaded columns, and 2" to 2.5" for the lower level columns outside of the tower section. It was assumed that the columns outside of the tower section would be supported by 14" square prestressed concrete piles driven to a tip embedment of 170 ft below the existing ground surface. No settlement readings were recorded during the construction of the building.

Superdome

The Superdome structure, impressive in size, is a stadium and two adjacent parking garages. The major loads are carried to the foundation by columns placed in an oval configuration around the periphery of the playing field as shown by the partial foundation plan in Figure 11. The soil conditions are similar to those previously discussed except that the second Pleistocene horizon was encountered at a depth of 140 ft in the southwest quadrant. In a portion of this quadrant, the sands that are normally encountered at a depth between 75 ft and 100 ft extended to 130 ft below the existing ground surface.

Because of the depth of the sand, predrilling operations could not sufficiently penetrate the sand strata to allow prestressed concrete piles to be driven through them and jetting was not an option. Also, considering the thickness of the sand strata, it was highly probable that steel H-piles and open end steel pipe piles could not penetrate these sands in the southwest quadrant without some of them meeting refusal. Therefore, it was accepted by the design team that these piles would meet refusal at an embedment of 100 ft to 110 ft below the existing ground surface in a portion of the southwest quadrant of the dome and piles in the remaining portion of the structure would be driven to greater depths. The difference in the elastic deformation and creep in the piles under the different soil support conditions will result in differential settlement.

A test pile program was conducted in each quadrant considering 14" square precast concrete piles, 16" diameter open-end steel pipe piles, and 14 × 73 steel H-piles driven to a tip embedment of 165 ft below the existing ground surface to control settlement. The 14" square prestressed concrete pile was chosen with a design load capacity of 175 tons. To account for any differential settlement that may occur in the structure, a continuous steel tension ring was constructed where the Superdome's walls met its roof line. If differential settlement occurs in any footing, the loads are transferred through the superstructure, up through the tension ring, and then back down to the adjacent pile caps. Settlement records were maintained during construction. At the end of construction, the maximum differential settlement between any two individual pile caps was 0.5" and the maximum total settlement observed in a pile cap was 1".

Conclusion

Today's geotechnical engineer has more technology available than ever before to evaluate in situ soil conditions and provide predictions regarding pile installation and foundation behavior. The cone penetrometer test provides a continuous measurement of end bearing and sleeve friction in the soil that can be converted into the estimated skin friction. The pile driving analyzer provides invaluable information regarding the condition and load carrying capacity of driven piles. Even with this technology, additional research is deemed necessary to verify the assumptions used in the design settlement estimates for deep pile foundations. Except for the settlement records at One Shell Square, very little information is available regarding long-term performance of driven piles and the load distribution on piles that ultimately produce long-term settlement. There is an apparent need for the geotechnical engineers, structural engineers, architects, and owners in the New Orleans area to partner and invest in developing this information to advance the understanding of — and reliability in — the design processes for deep pile foundations.

Chronology of events

1849 Spread footing foundation - Pontalba Building
1897 First pile foundation - Central Power Station
1906 First geotechnical recommendation for pile foundation - Hotel DeSoto
1920 First large pile foundation - American Sugar Refinery
1920 First pile load test - American Sugar Refinery
1920 First settlement records made - Hibernia Bank Building
1920 First use of composite timber pile
1922 First treated timber pile use - Dinwiddie Hall, Tulane University
1937 Louisiana WPA foundation study
1940 Karl Terzaghi investigates Charity Hospital foundation
1946 Introduction of high capacity pile
1964 Walter Blessey conducts pile research program
1964 First major use of the precast Brunspile - Plaza Towers

Abbreviations

el - elevation in feet from the mean sea level datum
ft - foot or feet
kip - kilopound
ksi - kilopounds per square inch
psi - pounds per square inch
psf - pounds per square foot
' - foot or feet
" - inch or inches

— 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

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

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http://www.uno/~engr/asce/asce.html

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