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Announcements: Louisiana Civil Engineering Conference and Show in Kenner September 13-14, 2007

Annual Meeting in New Orleans September 14, 2007 FEATURES: Hurricane protection in New Orleans: Historical perspective Access management

## NEWS:

Ray DesOrmeaux honored Section considers workshop Body of knowledge Tulane



# **PROFESSIONAL LISTINGS**



## THE LOUISIANA CIVIL ENGINEER

## CONTENTS

President's Message
Hurricane protection in New Orleans:
Historical perspective
Access Management
Branch News and Leadership Forum10
Section Annual Spring Meeting14
Louisiana Civil Engineering Conference and Show15
Student Chapter News
Section News and Information17
Professional Listings
Services and Suppliers

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# **President's Message**

## By Timothy M. Ruppert, PE

Dr. Martin Luther King warned us, "Nothing in the world is more dangerous than sincere ignorance and conscientious stupidity." How true. We know there are people who will plow ahead with ill-fated determination no matter what the facts or evidence counsel. I am sure we all know people who are glad to applaud the wisdom of science when it supports their opinions, but will quickly and off-handedly dismiss it when it runs counter to their beliefs. For some, custom and comfort trump all other concerns.

Almost since day one, we in the flooded crescent of New Orleans have suffered the burden of incorrect perceptions about who we are, why we are here, and how this happened. And almost since day one, sullen masses of critics near and far have refused to listen to any evidence that these popular perceptions are not true.

I could write a whole series of articles on the theme of *Popular Myths and Potent Lies* about this experience. Topics would include

- New Orleans is below 20 feet sea level
- We have already sent \$110 billion to New Orleans
- Hundreds of miles of marsh historically protected New Orleans
- The Mississippi River Gulf Outlet is a hurricane super highway and
- many more.

But thankfully ASCE is on the forefront of myth-busting. A recent letter highlighting the findings of the ASCE External Review Panel implores us to "move beyond sound-bites and armchair theories." We must let science guide

### Global competition:

ASCE President Bill Marcuson in his 2006 inaugural address emphasized preparing the civil engineer for the future. He explains an axiom that success happens when preparation and opportunity meet and that we are only in charge of our preparation. The trends he identifies in the global market

- engineering is perceived as a commodity not a profession
- U.S. civil engineers earn 5 to 10 times more than those in developing countries
- the population of civil engineers in developing countries is large and growing, and
- engineers in developing countries are becoming more capable and accessible

indicate that U.S. civil engineers cannot compete as technicians in the future. They must differentiate their qualifications and services through preparation to justify a difference in their higher compensation.

Marcuson identifies *leadership* — a trait gained by preparation (education and training) — as the differentiating asset to move the U.S. civil engineer up the food chain in global practice while conceding the rote technical engineering work to the engineers offshore. Otherwise, national policy decisions and avoid making irrational decisions based on sensation-seeking headlines.

## We must let science guide national policy decisions and avoid making irrational decisions based on sensation-seeking headlines.

This is vital for 2 potent reasons. First, because America is investing an awful lot of money into projects in coastal Louisiana and we do not want that money to be wasted on ineffectual, ill-conceived projects. If the protections we construct cannot do the job, then the cities and the people here will continue to be in grave danger. That is morally unconscionable.

Second, because the next time it might be YOU. This issue reaches well beyond hurricane protection. Americans must learn or relearn to trust scientists and engineers to do their job and to provide the rational answers that we need. Today it is hurricane protection, but tomorrow it might be communicable diseases, or air quality, or global warming.

It seems to me that many people in the United States have lately taken on a nearly antiscience attitude. Our most learned citizens are viewed with skepticism when their research results in unpopular or inconvenient conclusions. It has become quite popular to deride scientists as *eggheads* who reside in *ivory towers*.

## - Observation -

the declining role of the U.S. civil engineer may signal the loss of their unique infrastructure and environmental competence and their tradition of placing the highest priority on public safety, health, and welfare.

Concerns that immediately come to my mind are:

- there is no monopoly on leadership and ethical traits
- local experience and values are dismissed by the ASCE et al in support of indiscriminate privatization of government engineering services
- like the rarity of a professor who is proficient in both research and teaching probably there is a similar rarity of an engineer proficient in both leadership and technology.

I strongly agree with Marcuson in a general way that the value added through site-specific services and serving local values in the engineering services should be a competitive advantage in a global market for both the leadership and technical roles. However, this may be trumped by the perception already espoused by the civil engineers in the United States that — when it serves their purposes — engineering is a commodity. - *Editor* 



Somewhere along the way, the validity and superiority of the scientific method has escaped many Americans. Somehow faith, convenience and the warm fuzzies have ascended above rigorous, rational observation and analysis.

## Somehow faith, convenience and the warm fuzzies have ascended above rigorous, rational observation and analysis.

The ASCE External Review Panel notes that, "The findings from the research efforts conducted after Hurricane Katrina in some cases challenge conventional wisdom." And as it could have been predicted, there have been some unfriendly responses to those conclusions.

Contrary to the popular saying, ignorance is not bliss in this instance. Self-imposed ignorance will lead to repetitive misery and suffering. As Dr. King warned, this is a dangerous path to travel.

We should be proud that ASCE has stepped forward in this matter. The ASCE External Review Panel has been honest and sharp in its critique of the hurricane protection system, but it has always proceeded with the solid foundation of science and sound engineering practice.

The ASCE External Review Panel press release is online at: <u>http://www.asce.org/pressroom/news/ display\_press.cfm?uid=3390</u>

**About the cover:** The photograph is Figure 5 and the inset (bottom right) is Figure 6, both from the feature article "Access Management." It demonstrates uncontrolled access along an urban principal arterial and through a signalized intersection with an urban collector. The inset demonstrates controlled or managed access at a similar intersection. Outside of just looking cleaner and less busy, the intersection with controlled access offers important safety and capacity enhancements that are particularly compatible with the geometric design features and signal timing for the urban principal arterial and provided in both examples.

## Hurricane protection in New Orleans: Historical perspective

## By Alfred C. Naomi, PE

## Introduction

In the aftermath of Hurricane Katrina, there have been renewed calls for higher levels of protection for communities in coastal Louisiana. These higher protection levels could include protection against category 5 hurricanes. Construction of these projects will likely be on a scale that will dwarf previous efforts. Before proceeding with the planning, design, and construction of such massive projects, it is prudent to reflect on the existing hurricane protection projects to learn what factors influenced their development and how they evolved over time.

Such an investigation could provide valuable insight into future problems that engineers may encounter again and may choose to avoid as these new more complex projects are formulated and constructed over time. The purpose of this kind of historical perspective is to describe the broader decision-making environment that evolved throughout the development and construction of the existing project. This will foster understanding of why critical decisions were made and how those decisions impacted ongoing project development.

In preparing this historical perspective, the design adequacy of particular elements of the project is considered a separate issue that is neither developmental nor evolutionary in character and therefore not addressed here. This issue is being addressed by the Interagency Performance Evaluation Team and others and the results are the subject of intense discussions by engineers and scientists both inside and outside of the U.S. Army Corps of Engineers.

## Early history

Levee construction in southern Louisiana began shortly after the establishment of settlements along the Mississippi River. Experience with annual river flooding events resulted in higher and stronger levees constructed by local levee districts and private citizens prior to the great flood of 1927. That flooding event caused Congress to create the Mississippi River Commission and to authorize the construction of miles of levees, floodwalls, and structures to control future Mississippi River floods. The goal was to establish consistent and coherent flood protection for the entire lower Mississippi River. Although construction of this project continues into the 21st century, to a great extent, the goal has been accomplished. The earlier system of diverse local protection levees has been replaced with a regional system of protective

works with consistent design and functional criteria. However, none of these efforts address the very real threat of flooding from hurricanes in coastal Louisiana and in particular the New Orleans area.

Hurricanes were once considered infrequent events and the flooding they caused generally occurred in the uninhabited, flat marshy ground in the northern part of the city along Lake Pontchartrain. Residential and commercial development in New Orleans was initially concentrated along high ground next to the Mississippi River for most of its history. A cross section of the city taken in 1828 shows the high ground near the river gradually decreasing to a flat, coastal plain interrupted only by the Gentilly Ridge. The Gentilly Ridge was a former distributary of the Mississippi River and years of sediment deposition had caused its path to be raised several feet above sea level. The area between the ridge and Lake Pontchartain was flat, marshy and not conducive to habitation.

As the city continued to develop, most development was limited to the high ground near the river and along the Gentilly and Metairie Ridges. In the late 1800s, however, the development of mechanical pumping systems began to change the face of the city. The mechanical pumps were highly desired because they enabled the city to reliably remove rainwater from developed areas instead of relying on gravity drainage. They also helped to address the problem of mosquitoes that spread yellow fever that afflicted the city's residents every summer. Draining the marshy wetlands between Lake Pontchartrain and the city helped to eliminate the mosquitoes, improve drainage and ultimately open additional land for development.

The success of the pumping efforts can be readily seen in the map of the city in 1936 shown in Figure 1. Large areas that were formerly uninhabited were being developed. These include the Lakeview, Gentilly, Lakeshore and Eastern New Orleans neighborhoods. Similar development was occurring in Jefferson and St. Bernard Parish. So the first half of the 20th Century resulted in rapid growth of the city into areas where little or no hurricane protection existed. The Orleans Levee District and Lake Borgne Levee District constructed local protection levees in their jurisdictions but there was no comprehensive protection system similar to the Mississippi River levees.



### Lake Pontchartrain and Vicinity project

After the Hurricane of 1947, local officials began efforts to secure federal funding for a hurricane protection project. Congress authorized the Corps of Engineers to study the problem. The Corps in turn enlisted the services of the National Weather Service (NWS) to develop the criteria for a design storm. In 1959, the NWS established standards for the Standard Project Hurricane (SPH) that defined a hurricane that may be expected from the most severe combination of meteorological conditions that are considered reasonably characteristic of the region involved.

The NWS defined the SPH as having a wind speed of 100 miles per hour at a radius of 30 nautical miles with a central pressure of 27.6 inches<sup>1</sup>. This storm was used as the basis of designs for the proposed hurricane protection project.

Using the NWS criteria, the Corps prepared a report describing a plan consisting of combinations of levees, floodwalls and structures and submitted it to Congress for authorization. Most notably, the Corps' proposal included massive structures at the Rigolets and Chef Passes that would keep storm surges out of Lake Pontchartrain. Also included were levees and floodwalls in the Inner Harbor Navigation Canal, St. Bernard Parish and Eastern New Orleans. Lower levees were proposed along the New Orleans lakefront and on the St. Charles Parish lakefront. The existing levee on the Jefferson Parish lakefront was considered sufficient and no work was planned for that location. Further, the levees existing along the 17th Street, Orleans, and London Outfall Canals, which had been constructed by local interests, were also deemed to provide sufficient protection under the proposed plan. Ultimately, in 1965,

(Continued on Page 6)

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5

### (Continued from Page 5) \_

Congress authorized construction of the Corps plan as depicted in Figure 2.

One other aspect of the project was rather unique at the time. Local sponsors were required to provide financing of 30% of the project costs. This 30% could include real estate, relocations, cash and work-in-kind. Work-in-kind is the design and construction of portions of the project by the sponsor to meet the 30% requirement. Most Federal projects at that time only required that local sponsors provide the real estate, relocations and in some cases assume operations and maintenance once the project was completed. This cost sharing provision led to the execution of agreements between the Corps and local sponsors. The sponsors included the

- Orleans Levee District in Orleans Parish
- East Jefferson Levee District in Jefferson Parish
- Pontchartrain Levee District in St. Charles Parish
- Lake Borgne Levee District and
- St. Bernard Parish Government in St. Bernard Parish.

Each of the sponsors had their own sources of income and their ability to pay their share of

project costs would vary widely over the life of the project.

#### **Project development**

Construction of the project got under way in 1967 and major design efforts began on the 2 proposed barrier structures. Initial construction contracts for the Chef Pass barrier were under way when a lawsuit was filed in Federal Court in 1975 by *Save Our Wetlands* and others seeking to halt construction based on concerns about the adequacy of the project Environmental Impact Statement. In 1977, the Federal court enjoined construction of the barriers and the work ceased.

To address the injunction, the Corps prepared a reevaluation report for the project, along with a revised EIS. In these documents, which were approved by the Chief of Engineers in 1985, the Corps recommended that the barriers not be constructed. Instead, an alternative solution called the *High Level Plan* was proposed. This proposal provided for the construction of much higher levees along the lakefront of Jefferson and Orleans Parishes and a levee along Airline Highway in St. Charles Parish. Under this proposal, storm surges would no longer be blocked at the Rigolets and Chef Passes, but would be allowed to enter Lake Pontchartrain. The surge would then be controlled by higher lakefront levees. The report also acknowledged that higher surges would be directed to the 3 outfall canals and that action to address this problem would be required. The new environmental impact statement was acceptable to the Federal Court and the plaintiffs and construction of the alternate plan was allowed to proceed 8 years after the initial injunction.

Since the Corps had gone to a great deal of trouble to reevaluate the project, one would think that it was an opportune time to incorporate new SPH designs by the NWS into the project. But to better understand the situation, one must step back and look at what was happening nationally and locally to impact the decisions made at that time. The late 1970s and early 1980s were a time of double digit inflation. Costs were rising rapidly and the Lake Pontchartrain and Vicinity project cost estimates had grown from \$65 million in 1965, to \$645 million by 1983. The rising costs were placing tremendous pressure on local sponsors to provide their share of the project costs.



Figure 1. Map of New Orleans (circa 1936) demonstrates the rapid development north of the river ridge in low-lying areas made feasible for real estate development by the mechanical pumping systems that effectively drained the rain water out of the area.



Figure 2. Map of New Orleans reflects the Corps' hurricane surge protection project plan that reflects the NWS Standard Project Hurricane criteria. It was authorized for construction by the Congress in 1965. It notably included massive structures at Rigolets Pass and Chef Pass to keep hurricane storm surges out of Lake Pontchartrain.

In 1974, Congress enacted the Hebert bill that allowed local sponsors to delay payments for up to 10 years. First, St. Bernard Parish and the Lake Borgne Levee District took advantage of the legislation and stopped sharing in the project costs. Second, the Orleans Levee District lost a court case that resulted in the requirement that they return land in the Bohemia Spillway to the original landowners. The land was providing oil revenues to the Levee District and its loss meant that a major source of income was lost. Third, in 1978, the Orleans Levee District, in a letter to the Louisiana Department of Transportation and Development, expressed concern that it would not be able to cost share in the project if costs continued to escalate.<sup>2</sup> The Levee District also described similar financial difficulties experienced by the Pontchartrain Levee District, Lake Borgne Levee District, and St. Tammany Parish. Fourth and finally, a report by the Government Accountability Office3 (GAO) in 1982 was critical of the slow pace of project construction and expressed concerns about the ability of the local sponsors to fund their share of the project. The GAO report also observed that one local sponsor "believed that the Corps' standards were too high to attain adequate, affordable and speedy protection."

Based on all of these concerns, if the Corps would have implemented the new SPH storm design criteria of the NWS, it would have meant that the many miles of floodwalls that had already been constructed in Orleans and St. Bernard Parishes would become substandard and would have to be rebuilt to higher elevations. This would delay the project completion by many years and increase escalating costs even further. These concerns resulted in efforts by the Corps and local sponsors to move ahead with the project based on original designs modified only as needed to eliminate the originally planned barrier structures.

### **Outfall canals**

Work proceeded on the lakefront levees and structures but the problem associated with the 3 outfall canals persisted. The Corps evaluated several alternatives and ultimately recommended that gated structures be installed where the canals entered Lake Pontchartrain. The structures would be closed when storm surges entered the lake. This would prevent the surge from traveling up the outfall canals thereby eliminating the need for floodwall or levee protection along these canals.

Local officials did not support this plan because they were concerned that the large pumping stations located along the canals would not be able to pump rain water out of the city if the gates were closed. In the Corps' estimate, if high storm surges were allowed in the canals, the pumping stations would lose their ability to pump against the increased head. The result would be that rainfall flooding would occur in the city regardless. Further, the Corps believed that the Congressional authorization language did not permit the Corps to assist local governments with any resulting internal drainage issues.

The advantages of the gate structures at the mouths of the outfall canals were significant. First, the gate structures were far less expensive than the miles of floodwalls that would otherwise have to be constructed along the outfall canals. Estimates at the time indicated that the gate structures could be constructed for approximate-ly \$45 million. The floodwall option was esti-

mated to cost approximately \$108 million. Second, construction of the floodwalls would require that the 10 bridges that cross the canals would have to be replaced and 4 pumping stations would require large fronting protection structures. Third and finally, the gate structures at the mouth of the canals could be constructed more quickly than the miles of floodwalls, bridges, and fronting protection structures.

Local officials, however, were adamant in their objections to the gate structures. So the Corps and local officials were at a stalemate until Congress acted. Language in the Energy and Water Appropriations Act of 1992 directed the Corps to construct floodwalls along the Orleans and London Canals. For the 17th Street Canal, the Corps agreed to construct the locally preferred floodwalls since for that canal, the costs were equal to that of the gated structure.

Although directed by Congress to construct the floodwalls along the canals, the Corps did not request funds for this construction in the annual budget submissions to Congress since the higher costs did not comply with the policies of the Corps or the Administration. However, Congress added funding in the annual appropriation bills to pay for the construction. So the floodwalls along the canals were constructed through a combination of Corps and local sponsor contracts using designs developed by the Corps, its contract architect-engineers, and local sponsor engineering contractors. It should be noted that concerns about the length of time required to construct the floodwalls along the outfall canals were prophetic. When Hurricane Katrina struck, 3 contracts still needed to be built along the Orleans and London Canals.

By 2005, the project had evolved into the high level plan including the banks of the 3 out-fall canals as shown in Figure 3. The project looked quite different than it did when it was first authorized by Congress in 1965.

### **Budgetary pressures**

As work on the project moved into the 1990s, the Corps budget came under increasing pressure. Appropriations did not keep pace with inflation or the increased number of projects around the nation needing funds. Annual appropriations declined from \$39.9 million in 1990, to \$5.7 million in 2005 for the Lake Pontchartrain and Vicinity project. The decreased funding meant that the completion of the project was further delayed. As of 2005, it was estimated that the project would not be completed until 2015. The 2005 budget allowed for the funding of continuing construction contracts but it was not sufficient to award any of the new contracts planned for the project.

Budgetary pressures were not solely a Federal problem. As previously noted, St. Bernard Parish and the Lake Borgne Levee District stopped making contributions to the project based on the provisions of the Hebert bill. That bill required the payment of the balance owed at the end of 10 years. The sponsors did not have the funds to pay this balance and in the Water Resources Development Act of 1996, Congress granted forgiveness of this debt.

(Continued on Page 22)

## Access management

## By John M. Broemmelsiek, PE

## Introduction

A recent report, issued by a national transportation research group, presented a dismal view of the condition and safety of the public road infrastructure in Louisiana. The research found 22 percent of the major roads in Louisiana to be in poor condition with an additional 25 percent in mediocre condition. On Louisiana's urban Interstates and freeways, 28 percent are considered congested and the traffic fatality rate of the state is 40 percent higher than the national average.<sup>1</sup>

Obtaining the funds to address the \$14 billion backlog of work that would correct the road condition and capacity problems in Louisiana would seem problematic at best. There are effective strategies that must also be considered that can avoid large conventional capital improvements and yet substantially improve the capacity and performance of the existing road system. Access management is one such strategy that a growing number of states are using to better manage and utilize their existing highway transportation network.

#### Definition

According to the Federal Highway Administration and the Transportation Research Board, access management is the systematic control of the location, spacing, design and operation of driveways, median openings, interchanges, and street connections to a roadway. The purpose of access management is to provide access to land development while simultaneously preserving the flow of traffic on the surrounding road system in terms of safety, capacity, and speed.<sup>2</sup>

Access management is a process by which local, State and Federal governments maintain the functional classification of a roadway network. This process is all encompassing within and between sovereign jurisdictions and includes the following business functions:

- planning
- engineering
- permitting
- real estate
- legal
- management and
- others

While the fundamental principles associated with access management have been in existence since the early 20th century, the modern access management initiative began in Colorado during the 1980s. Under an FHWA demonstration project authorized by the 1978 Highway Transportation Act, the Colorado Department of Transportation tested access design standards on several arterials in the metropolitan Denver area. Based on the positive impact on capacity and safety from that project, the State of Colorado pursued a comprehensive Access Management program that encompassed the entire State.<sup>3</sup> Since then, the program has grown steadily across the nation.

More information is available through the TRB Subcommittee on Access Management (AHB70) that maintains a website at <u>www.accessmanagement.gov.</u> Presently, over 25 states have implemented some form of access management and it is increasingly seen as a competitive advantage in serving and attracting business and industry.

### **Functional classification**

The basic framework of access management is the functional classification of roadways. Roadways are generally grouped into three broad categories distinguished by function and include arterials, collectors and local roads. Figure 1 gives a visual representation of these functional classes. While it is generally understood that each classification has unique road design standards, it is less understood that each classification has access standards that must be maintained in order to function as intended.

#### Functional systems

The functional classification of a roadway is directly related to its intended function or purpose. If the purpose of a roadway is to facilitate high-speed, interstate or intercity travel, then that roadway is classified as an arterial. At the other end of the spectrum, if the purpose of a roadway is to strictly serve local land use and facilitate access to property, then the roadway is classified as a local road.

If the purpose of a roadway is to facilitate intra-parish or intra-city travel, then the roadway is classified as a collector. Along with facilitating inter-city travel, a collector functions as a gateway between high speed arterials and low speed local roads. As its name implies, this type of road *collects* traffic from the local road system and carries it to defined connections on an arterial. An equally important function of a collector is to facilitate the smooth deceleration of high speed arterial traffic before it accesses property via local roads.

When the functional classification of a roadway is assigned, the associated design speed determines the specific physical parameters of the design such as

- vertical/horizontal alignment
- lane width
- shoulder width/type



- median width
- · drainage and
- · other factors

However, there are corresponding access standards that must also be maintained to achieve the target design speed.

#### Access standards

The appropriate relationship between mobility, access density and functional classification is shown in Figure 2. Mobility in this instance is measured as average speed, while access density is measured as access points per mile of roadway. The shape of the curve varies based on the design features of the roadway and operational factors such as the characteristics of individual access points.

Based on typical state access management standards, the access densities for an arterial should range from less than 1 access point per mile for principal arterials to between 8 and 12 access points per mile for a minor arterial. By comparison, it is very common in Louisiana for principal arterials to have access densities between 60 and 80 per mile. Collector access densities can vary widely but typically range between 12 and 40 access points per mile. A local road is intended to provide full access to property so access density limitations do not usually apply. The variations in access density are related to a variety of factors including the design of a particular roadway, volumes generated by access points, and the rural or urban environment.

### Control of access

One of the most important implications of the curve shown in Figure 2 is that the relationship between access density and roadway speed is a continuous function. Small changes in access density result in small changes in average

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(Above) Figure 1. An illustration of the urban functional systems that demonstrates the mobility and access that is provided by arterials, collectors and locals as it is related to land use.

(Right) Figure 2. The schematic continuous function demonstrates the relationship between the access and mobility provided by the functional systems. (Koepke and Levinson, Transportation Research Board, Access Management Guidelines for Activity Centers (Report No. 348, 1992))

speed. Access need not be restricted to Interstate standards to have an impact on mobility. Even minor reductions in access density can have a positive impact on average speed and safety. Unfortunately, access is too often considered to be discrete – either there is access control or there is not. The challenge is to manage transportation and development processes such that the different degrees of access controls appropriate to the function of the roadway are maintained.

If the physical design standards of an arterial are not matched with the corresponding access standards, the result is a roadway that the driver expects to function at higher speeds but in fact must be driven at a lower speed. This is deceptive to the driver and thereby results in an increase in crashes. Figure 3 is an example of a roadway designed as an arterial, but with no apparent access standards. The failure to adequately plan, build and maintain all three functional classifications in a transportation network has serious negative consequences in terms of safety, road capacity and the economic performance of the communities that are served.

### Effects of access management

#### Safety

Vehicle crashes have a devastating impact on society. The latest average cost figures for a crash in Louisiana include property damage at \$7,900, injuries at \$63,000 and fatalities at \$3,000,000.<sup>4</sup> Studies have consistently shown that access problems are a likely culprit in many crashes. The State of Colorado estimates that 57 percent of the total annual cost of vehicle crashes is access-related, not counting additional upstream rear-end crashes caused by access problems. In 1994, this cost equaled \$900 million.<sup>5</sup> Also not included are the opportunity costs to law-enforcement and first responders associated with having to spend valuable time tending to vehicle crashes as opposed to other more productive activities.

According to the FHWA, the most important



Figure 3. A roadway designed to principal arterial standards but without any apparent access standards applied. (FHWA Louisiana Division)



geometric design feature in reducing crashes is access control.<sup>6</sup> Over 4 decades of research, much of which is documented in the NCHRP Report 420: *Impacts of Access Management Techniques*, have concluded that access management techniques provide clear and long-lasting safety benefits.<sup>7</sup> The reasons are intuitive and they include

- reduced vehicle and pedestrian conflict points
- reduced speed differentials
- greater driver awareness of potential conflicts
- fewer distractions to drivers and
- fewer decision points on higher speed roads. A synthesis of research has led to the devel-

opment of an access density-crash relationship. From a baseline of 10 access points per mile, vehicle crash rates increase 30% with an additional 10 access points per mile as shown in Figure 4. Also vehicle crash rates increase 310% with an additional 60 access points per mile. This is a non-linear, continuous relationship that demonstrates the benefits that can be accrued by limiting, though not necessarily eliminating access points.

To show how access management techniques can result in lower crash rates, two intersections are presented - one in Louisiana and the other in a state with an active access management program. A typical, commercially developed, signalized intersection in Louisiana is shown in Figure 5. The 2 driveways shown on the northeast side of the intersection present a safety hazard to the driver. A lengthy green phase on the main thoroughfare provides an opportunity for drivers to proceed through the intersection at high speed. However, after quickly passing through the intersection, a driver immediately enters an area of slow and turning traffic associated with the driveways on the corner lot. Even drivers from the opposite direction can use the left turn lane to enter the business. Drivers are lured through this signalized intersection at a high rate of speed only to enter an area with 2 access points that place both slow speed and left-

(Continued on Page 24)

## **Branch News and Leadership Forum**

## SHREVEPORT \_\_\_\_\_\_ By Elba U. Hamilton, EI, President

### Spring Classic

The Branch hosted its traditional golf tournament, *The Spring Classic*, at Southern Trace Country Club on May 14th. Throughout the afternoon, Branch members and guests enjoyed a great time of visiting, dining at the buffet, and playing golf. The winners this year included Raley and Associates (first place), Tetra Tech (second place), and Aillet, Fenner, Jolly and McClelland (third place). On behalf of the Branch, I would like to thank all those who sponsored and participated in this year's tournament.

Special thanks goes to Rusty Cooper for planning and organizing this outstanding tournament and Branch event for the second consecutive year. I would also like to thank all the companies that sponsor our Tournament. Thanks to this vital support the Branch is able to continue awarding annual scholarships to Louisiana Tech students. If you have any suggestions or comments on how to improve this event in future years, please email Jarred Corbell at jcorbell@afjmc.com. Jarred, who did a great job as the Treasurer of the Branch, will be the President-Elect of the Branch for the next administrative year and he will be organizing the next tournament.

### **Bobby Price**

On behalf of the Board and membership of

the Branch, I would like to congratulate Bobby E. Price, PE, on his most recent honor. The ASCE Board of Direction elected him to the membership grade of Honorary Member. He was among the 10 individuals that were elected to Honorary Member in April 2007. This is a distinguished membership grade to which only 565 members have been elected since 1853. Congratulations Dr. Price. We are honored to have you as one of our Branch membership. For a list of ASCE Honorary Members, information about the selection process, and a link to the nomination form and worksheet to guide you

(Continued on Page 11)



The first place Raely and Associates team with their awards are from left Bill Mayfield, Dean Mayfield, Jeff Raley and Reggie Lewis.



Second place Tetra Tech team members await tee-off time. From left they are Eric McClanahan, Gerald Adams and Lloyd Hoover. Logan Hoover is not shown.



From left are Daniel Thompson, Scott Hughes, Eric Hudson, Keith Northwood, Beth Schatz and Cody Goodwin enjoying the buffet before the tournament.



Happiness is... Gary Clark teeing off.

# ACADIANA — By M. Jamal Khattak, PE, President

Representative Donald Mark "Don" Trahan was a guest speaker for the April Branch membership meeting and luncheon. He discussed the plans of the Lafayette Chamber of Commerce campaign for seeking additional transportation funding. The Chamber is calling for "all highway user fees to be dedicated to building and maintaining our highways." To accomplish this goal, a number of bills have to be introduced.

Representative Trahan led the formation of a coalition of legislators to introduce and facilitate the passage of the necessary legislation to accomplish the goal. Kam K. Movassaghi, President of C.H. Fenstermaker & Associate and formerly the Secretary of the Louisiana DOTD also made an excellent presentation to further inform the Branch members present about the aforementioned issue. The Branch Board and the membership present strongly supported this campaign.

Recognizing the importance of improving membership meeting attendance, the Board implemented the following plan:

- mail the newsletter 2 weeks before a meeting
  send a mass email reminder 3 days before a meeting and
- telephone companies/members the day before a meeting.

This plan improved the attendance of the last meeting and the Board will continue with the plan.

The Branch unveiled part of its outreach program presentation, *What is Civil Engineering?* The first presentation was made to the senior class of the Northside High School Engineering Academy on April 20th. The presentation, intended for high school students, is to encourage their interest in civil engineering as a career. It is a Powerpoint presentation developed to be made by volunteer Branch members to a high school student audience. Its first presentation was made by **Dax A. Douet**, PE and **Robert S. Wang**, PE, and it was well received by the students, who were very attentive and asked several followup questions about civil engineering. Special thanks to Dax Douet and Bob Wang for volunteering their time and effort to promote civil engineering and the Branch.

As a part of the Branch commitment to provide continuing education to the local civil engi-

## (Continued on Page 13)



Bob Wang presents his portion of the Branch outreach presentation developed for high school students titled "What is Civil Engineering?"



Dax Douet makes his part of the Branch outreach presentation to high school students.

### (Continued from Page 10)

through the nomination process, visit the ASCE website at <u>http://www.asce.org/pressroom/hon-ors/honors\_details.cfm?hdlid=2</u>.

The Branch is planning to host a reception to celebrate Bobby Price's distinguished career and service, and the event of his elevation to Honorary Member. We will keep you informed during the summer as plans are developed and the details of the reception become available. We encourage all of you to attend and celebrate with us.

### **Branch business**

I am pleased to announce that J. Daniel Thompson, EI, has been nominated by a Branch member and recommended by the Branch Board to serve as the Treasurer of the Branch. The Board is also recommending Eric T. McClanahan, EI, to serve as the Secretary of the Branch. Daniel and Eric along with their fellow Branch officers will be installed in September during the first Branch membership meeting in the next administrative year.

On a personal note, I would like to thank all of you who so generously helped me throughout this administrative year. It has been truly a pleasure and honor to lead and serve the Branch during the year. There is no doubt that — at a professional level — leading the Shreveport Branch has been the highlight of this past year for me. I would have never thought that my extended maternity leave would double as a time for me time to be at home with my firstborn baby girl and to truly dedicate my efforts to serving the Branch. I am truly humbled that I was given this opportunity.

May I wish you a great summer and I hope to see everyone in attendance during the next Branch membership meeting scheduled for September 20. Please refer to your newsletter for more detailed information about the next Branch meeting and late breaking news.

## Leadership notes

As you who have served know — and you who will serve will learn — leading the Branch is not an individual effort but a joint effort of your elected leadership to whom I am truly indebted. We excelled as a leadership team serving in our elected offices. I believe that it not only made my job easier — it made my job possible. I have no doubt that the Shreveport Branch will continue its successful operations next year with the leadership of Rusty Cooper, your incoming President. I am also grateful for the help and leadership that the Branch received from Region 5 Director, Steven C. McCutcheon, PE, and the Section Board under the leadership of Section President, Tim Ruppert.

In closing, I wish to encourage each Branch member to consider volunteering your time in service to the ASCE and not just those who have never served previously. I know that many of our members have already served as officers for the Branch and the Section and/or they are serving or have served in other professional organizations. I would like to encourage those who have previous service to not count themselves out. I know that our experienced leaders are considered and known to be among the greatest leadership assets in the Branch and their continued service and support is greatly appreciated. The Branch remains in need of committed volunteers experienced and inexperienced - who will maintain our legacy of service in and to the Branch, and lead us in the years to come.

## BATON ROUGE \_\_\_\_\_\_ By Brant B. Richard, PE, President

## Membership events

There was a Branch general membership meeting and luncheon held May 17. It was a joint meeting with the Baton Rouge Chapter of the Louisiana Engineering Society. The guest speaker was Johnny B. Bradberry, Secretary of the Louisiana Department of Transportation and Development. His topic was "The Future of Transportation in Louisiana." The presentation was very interesting. He discussed the challenges facing the Department with the large backlog of transportation needs and the insufficient funding sources and mechanisms in place. Secretary Bradberry detailed the revenue streams in place along with a discussion of the upcoming legislation that could be beneficial to the Louisiana DOTD. We appreciate Secretary Bradberry taking time out of his busy schedule to meet with us. There was standing room only attendance for his presentation.

## Want better roads?

During the 2007 Annual Spring Meeting and Conference in Shreveport, Kam K. Movassaghi, PE, who is a past Secretary of the Louisiana DOTD, presented a session titled "Transportation issues facing Louisiana and the USA." This presentation really brought to our attention the lack of funding for transportation not only for Louisiana but for the entire United States. It has become a national problem.

Here at home, the Louisiana DOTD currently has a growing backlog of nearly \$14 billion in unfunded highway needs. To get our desperately deteriorated and needed highway infrastruc-

ture built throughout the state, we as ASCE members must be prepared to do what we can about this dilemma. That is why the Branch Board endorsed House Bill 722 and Senate Bill 258, giving them its full support. These 2 companion bills would shift existing transportationrelated tax and user fee revenues from being disbursed to the general fund to being disbursed to the state highway trust fund that is dedicated exclusively to transportation funding. It is a simple but powerful concept to dedicate the money collected by the state for transportation taxes and user fees to the state highway trust fund to build and maintain the highways. Our general membership was urged to actively support these bills by contacting their respective legislative delegations.

### President's message

As I complete my term as President of the Branch, It occurs to me that this has been truly a wonderful experience for me personally. It has allowed me to meet so many interesting civil engineers throughout this great state of Louisiana and to push our Branch membership to get involved and help make our small part of the ASCE a better organization to serve all of us.

When I set out to do anything, I like to set goals and measure myself based on the accomplishment of the tasks defined to achieve the goals. When I became President of the Branch back in September 2006, my goals were to be an effective voice and representative for the Branch throughout the year based on various activities and the positive exposure of our profession. Some of the measurements of success include the following:

- A new, updated Branch website <u>http://www.ascebr.org</u>
- A complete web-based communication system
- A state of the art mass email system to alert Branch members about membership meetings and other activities
- Exposure for the Branch through the WAFB-TV Channel 9 morning program promoting awareness of engineers and engineering during Engineers Week 2007
- Interstate billboard advertisements promoting the Branch and Engineers Week
- Challenging Branch members to be involved.

An image from the WAFB-TV Channel 9 morning program broadcast with an accompanying article made the *ASCE News*. It was used as an example to encourage other branches and sections throughout the nation to consider similar activities in the future.

Thank you for your vote of confidence this administrative year to allow me to serve as your president. I challenge every member of the Branch to continue or expand their involvement with the ASCE. Remember, you only get out of an organization what you are willing to contribute. It is the gift from giving.

Always continue to think, say and believe that *Engineers turn ideas into reality* and we can and do make a difference. Thanks for a great journey.

## NEW ORLEANS — By Christopher L. Sanchez, PE, President

The Branch recently elected its officers for the 2007-2008 administrative year and recognized its award recipients during its last membership meeting and luncheon scheduled for this administrative year. As the last Branch membership meeting and luncheon I will preside over as Branch President, it was a bittersweet event.

The officers and elected leadership of the Branch who are diligently serving our membership on its Board of Directors will be moving up as I will be moving aside. While I have served on the Board for the past 6 years, the past 2 years have been particularly challenging. It has been our lot to lead the Branch in the throes of the recovery from the hurricane devastation and to rebuild and continue to provide the services to our membership and the community that they have come to expect and appreciate. All of this is being accomplished with a reduced number of Board members, and with each of us serving on the Board having a reduced number of volunteer hours available away from our increased workload.

The next Board will have to continue to carry this extra burden toward completing what has been started. I plan to continue to support the Board in its efforts in my role of Past President. I will be assisting in identifying prospective candidates to fill committee vacancies that have had to be assigned to Board members doing double duty. Having stated this problem, it would be a great service and greatly appreciated in this difficult time for a few members to step forward and volunteer their services to our fellow members and the community and their leadership to help shape and pursue the plans and programs of the Branch.

Recent graduates and younger members in general can easily find there way into the Branch leadership by volunteering to help with our efforts to update the Branch website and maintain its membership list. At this time it is difficult to imagine our Branch with an up-to-date membership email and addresses database.

The experience of our seasoned Branch members is definitely needed at this time and they cannot be left out of the mix. Their services would be greatly appreciated in facilitating the reestablishment the Branch's foundering technical committee activities that have yet to recover and are effectively out of service at this time. The Branch Geotechnical Committee activities continue to stall due to a lack of supporting leadership and participation. Its Environmental and Water Resources Committee is a one-man committee chair. The Transportation Committee exists only as a reference on the Branch website.

The Branch Structures Committee has truly been a bright spot. It has continued in service with great success. As you may be aware and from its report presented herein, during the last year the Committee aligned itself with the ASCE Structural Engineering Institute and is now the New Orleans Branch SEI Chapter.

The newly elected Branch Board of Directors for the 2007-2008 administrative year are:

- Ronald L. Schumann, PE, President
- Nathan J. Junius, PE, President Elect
- Benjamin M. Cody, PE, Vice President
- Johann L. Palacios, PE, Treasurer
- Margaret S. Adams, PE, Secretary
- Reid L. Dennis, PE, Director
- Malay Ghose Hajra, PE, Director

• Christopher L. Sanchez, PE, Past President These officers will be installed during the Section Annual Meeting. To be hosted by the Branch at Bacco Restaurant in the French

Quarter, this Section membership meeting and

(Continued on Page 16)

## Branch SEI 2006 Annual Report -

## By Om P. Dixit, PE

### Seminars hosted

Since last reported in this journal, the Branch SEI (Structural Engineering Institute Chapter of the New Orleans Branch) hosted the following seminars in New Orleans:

**10 May, 2007** *Professional practice and business of forensic engineering* by Robert Ratay from Manhasset, NY. He specializes in the analysis of structural failures. This was the 2007 David Hunter Annual Lecture. According to Ratay forensic engineering is the analyses of the failed and damaged structures. He discussed the pitfalls of practicing forensic engineering alone and in a group. Ratay gave tips about testifying in court and encouraged engineers to express the facts within their expertise. This seminar was attended by approximately 80 members.

**7 June 2007** Underwater inspection of structures by Ken LeBry with C.H. Fenstermaker & Associates of Lafayette, LA. He demonstrated the equipment and techniques used to perform an underwater acoustic survey. He provided case studies showing amazingly clear images which can even recognize fish in the water. This seminar was attended by approximately 30 members.

### Future seminars planned

**9 August 2007** *What should structural engineers know about a geotechnical report?* by William W. Gwyn, PE, with Eustis Engineering, Metairie, LA and David E. Lourie, PE, with Lourie Consultants, Metairie, LA

**4 October, 2007** Seminar on Marine Design (Details and speaker to be announced)

**8 November 2007** Seminar on Seismic Design by Ronald Hamburger, SE (Details to be announced)

All Branch SEI sponsored seminars are held at the University of New Orleans. Seminar dates, pertinent information, and registration can be found on the New Orleans Branch website at <u>www.asceneworleans.org</u>. To add your name to the Branch SEI mailing list, email Om Dixit at <u>om@fenstermaker.com</u>. The Branch SEI is always interested in new topics and speakers and recommendations can be forwarded to jdanner@densoneng.com.

### **Executive Committee**

Executive Committee member, Brian Metrovic, previously an Assistant Professor in

the Department of Civil and Environmental Engineering at Tulane University, has moved on to a new challenge. As you are aware Tulane President Scott McGowen decided to eliminate the Department from the University. The Executive Committee wishes Metrovic the best in his future endeavors and we will miss him. The Executive Committee removed the Tulane University representative position from its membership.

The Branch SEI has continued its sponsorship of the Kids Tent at New Orleans Jazz and Heritage Festival by providing the funds for tee shirts and Norma Jean Mattei, PE, arranged for the volunteers to work in the Kids Tent. It was a lot of fun for the volunteers to work with the children for a couple of hours and then enjoy the Jazzfest for remainder of the day. Anyone interested in volunteering next year may contact Norma Jean Mattei. We owe a debt of gratitude to all those who volunteered and to Norma Jena Mattei for their contributions to this worthy cause.



John Housey (left) receives Past Chair's commemorative plaque from current Branch SEI Chair Jim Danner during the Annual David Hunter Lecture.



Robert Ratay (right), presenter of the 2007 Annual David Hunter Lecture, receives a plaque commemorating the occasion from Branch SEI Chair Jim Danner.

(Continued from Page 11) -

neering community, the Branch organized a spring seminar held May 9th at the Hilton Gardens Inn in Lafayette. The seminar was a comprehensive one-day event worth 8 professional development hours. It focused on 4 major technical areas in civil engineering that included

- transportation
- geotechnical
- structural and
- hydraulic/hydrology engineering. The Branch procured 4 session

leaders who are experts in the aforementioned technical areas and recognized nationwide for their professional, academic, and scholarly activities. They were

- William Fitzgerald, PE
- Gordon Boutwell, PE
- Robert S. Wang, PE, SE and
- Ehab Meselhe, PE.

The seminar was a great success and the Board received an excellent response and feedback from those who attended. Finally, the closing spring membership social function for the Branch took place May 17th. The annual crawfish boil was organized and hosted in cooperation with the Lafayette Chapter of the Louisiana Engineering Society and the Lafayette Section of the Institute of Electrical and Electronics Engineers. The Branch Board plans to get back to normal business activities in August.

# **Section Annual Meeting September 14, 2007**

# **Bacco Restaurant • New Orleans French Quarter**

## Announcement

The New Orleans Branch is pleased to host the Section Annual Meeting that features the installation of the officers of the Louisiana Section and the New Orleans Branch boards of directors and the recognition of some of the Section's most outstanding members as its annual award recipients. This meeting is held in conjunction with a banquet that celebrates the end of the Section's administrative year and the beginning of the next. All Section members and their guests are invited to attend and celebrate.

This year's event will be held in Bacco Restaurant, a great New Orleans Italian bistro in the heart of the French Quarter – 310 Chartres Street between Bienville and Conti Streets. Nearby parking is available including the W French Quarter Hotel at 315 Chartres Street. For more information, visit www.bacco.com.

In keeping with recent tradition, the Annual Meeting is scheduled Friday evening following the conclusion of the ASCE/ACI sponsored Louisiana Civil Engineering Conference and Show. A social and cash bar is planned to begin at 6:00 pm with the meeting and banquet to follow at 6:45 pm.

## Reservations

Reservations are required and must be made through Chris Sanchez by email at clsanchez77@cox.net or by telephone at 504-427-6419. The payment of \$55 per person is due and the choice of entrée will be taken on your arrival at the restaurant. Reservations must be made by September 10th. A reservation made is a reservation paid – no-shows will be billed. Make checks payable to Please be sure to include your contact information with your ASCENO. reservation including a telephone number to contact you in the event there is an interim change in plans. Seating was reserved based on previous attendance for this event and the reserved seating capacity cannot be overbooked. Therefore, make your reservations early.

## Menu

Bacco 4 Course Dinner: Assorted Antipasti, House Greens and Bread Pudding Entrées: Barbecue Shrimp – or – Pork Tenderloin

# Louisiana Civil Engineering Conference and Show September 13 - 14, 2007

Pontchartrain Center Kenner, Louisiana

# **Complete Information On-Line at:**

# www.asceneworleans.org

- Speaker Program
- Registration
- Exhibitor Opportunities
- Sign up for email updates

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## UNIVERSITY OF LOUISIANA AT LAFAYETTE -By Amy Henschke, Secretary

The Chapter brought the Spring 2007 semester to a close with the election of its new officers for the coming academic year. The following Chapter members were elected during the April Chapter membership meeting:

- Debra Hunter, President
- William Cenac, Vice President
- Nicholas Clark, Treasurer
- Amy Henschke, Secretary
- Reid Romero, Parliamentarian
- Michael Ronkartz, Senior Representative
- Jacob Vollmer, Junior Representative
- Chris Giglio, Sophomore Representative
- Jacob Whitmore, Sophomore Representative
- Alison Lognion, Freshman Representative The first goal set by the newly elected offi-

cers was to form working committees and to appoint the committee chairs. Several of the Chapter's committees plan activities for the Chapter that include field trips, speaker and student presentations, and community service proj-

## (Continued from Page 12) -

banquet is scheduled for the evening of September 14 following the conclusion of The Louisiana Civil Engineering Conference and Show. Details about — and registration information for — this event are provided in this issue.

The volunteer work we provide to the community is for the most part unnoticed, however it is very self-gratifying. As our Section President, Tim Ruppert, observed during the ceremonies of the last Branch membership meeting, one of the greatest things that can happen to us in our profession is to be recognized by our peers. In conjunction with Tim's observation, one of the most inspiring duties that I performed as Branch President was presenting the 2007 Branch awards to its outstanding members. A coincidence of this year's award ceremonies for me is that I personally know many of the recipients. As a younger member, many of the recipients have guided my career as professors, mentors and/or supervisors. I would hope that their accomplishments and example will be recognized and emulated in the future by our younger

### Management:

By its nature management effectiveness particularly requires an effective human connection between manager and others in organization. Poor connection — poor organizational effectiveness. In discussing his experience with the migration of seasoned government employed information technology managers to employment in industry, Michael Lisagor observes some basic problems they and their prospective employers may face in his article published in ects. Other committees organize and prepare for important Chapter events such as the Fall barbecue and its participation in the Deep South Conference.

Chapter members, and the civil engineering department faculty and professionals in the community gathered to celebrate the conclusion of another year during the Chapter's annual spring banquet. Several students were recognized with scholarships and honored with awards for their achievements. Our guest speaker was Kam K. Movassaghi, PE, with C.H. Fenstermaker and Associates, Inc. Kenneth L. McManis, PE, the Head of the Civil Engineering Department, also presented the state of the civil engineering program.

The Chapter leadership looks forward to the Fall semester and the opportunities it will offer to improve on the successes of the past academic year. It plans to continually strive to improve the character of the Chapter by

- increasing its value to its members
- increasing the number of members
- increasing member participation
- competing in the Steel Bridge and Concrete Canoe competitions during the Deep South Conference and
- becoming the "Most Improved Student Group" for the term.

Plans have already begun for the first major Chapter event of the Fall semester, the Annual Fall Barbecue. This barbecue will be planned for a day in September 2007. It is a time when Chapter members will join with the civil engineering department faculty and the professionals in the community to share food and fun at a nearby park. This event is a great opportunity for students of all academic levels to become involved in the Chapter and to meet fellow civil engineering students as well as the engineering faculty and the professionals is the community.

members. The Branch award recipients are

- Catherine C. Dunn, PE, Outreach Award for Community Service
- Benjamin M. Cody, PE, Outstanding Young Civil Engineer
- Walter O. Baumy Jr., PE, Outstanding Government Civil Engineer
- Norma Jean Mattei, PE, Outstanding Civil Engineer
- James C. Webb, PE, Lifetime Achievement
- Donald E. Barbé, PE, President's Medal

The new Life Members of the Branch are

- Eugene A. Brian, PE
- Leo W. Gagnon Jr., PE
- John C. Gribar, PE
- Lloyd A. Held Jr., PE
- Larry R. Heston, PE
- Enrique J. La Motta, PE
- Ronald J. Shaw, PE
- Harry W. Stinchcomb Jr., PE

As my term as your president comes to a close, I particularly want to thank the Branch Board of Directors and Branch membership for their

## -Observation-

*Federal Computer Week* (5/17/04). The transition is not always smooth, particularly for those who are placed in central leadership roles in a new culture. It is important that a realistic and somewhat flexible adjustment period be expected. To reasonably set these expectations, it is important that a prospective incoming manager expresses his values well and attempts to understand the organization's culture to achieve a good match between his values and its culture. And from this effort, inasmuch as it is possible, reaunfailing and continuing support. We have continued to sponsor Branch membership meetings and luncheons with opportunities for members in attendance to earn professional development hours to maintain their engineering licenses; recognized our outstanding members; continued to support the civil engineering students in the Branch; and pledged over a \$1000 to outreach programs that facilitate younger students finding there way into science and engineering.

Again, seasoned members, please continue or begin again to support our Branch. Encourage recent graduates and younger members to become involved in the Branch leadership and participate in its sponsored activities such as the Louisiana Civil Engineering Conference and Show. It is scheduled for September 13th and 14th at the Pontchartrain Center in Kenner. The agenda, technical sessions and registration information for the Conference are or will be available on the Branch website at <u>http://www.asceneworleans.org</u> that is also available through the home page of the Section website at <u>http://www.lasce.org</u>.

sonably and mutually assure that the organization's culture will allow the effective use of the prospective manager's strengths. Even though government managers migrating into industry often consider their first industry employment an "experiment" where failure is a possibility, why increase the risk of failure when simple but effective communication can substantially minimize the risk and potential for waste? - *Editor* 

## **Section News and Information**

## Highlights of the May Board of Directors meeting

The Board acted to support HR 2067 — a bill that will provide immunity from professional practice liability to engineers who volunteer their services in an area declared a national emergency. Steven C. McCutcheon, PE, Region 5 Board of Governors Chair encouraged the Section leadership to support this Federal Good Samaritan bill now being considered. This compares to the Louisiana Good Samaritan Law that gives immunity from professional practice liability to engineers who volunteer their services at the invitation by a public entity. The federal law would offer broader liability immunity than engineers have in Louisiana.

The letter received from ASCE President W.F. "Bill" Marcuson, III, PE, that reported the

## Tulane —

The Elimination of Civil Engineering

This old building (Walter E. Blessey Hall) opened for classes in 1894. The civil engineering program started in 1894. The marriage lasted for 113 years. Today, it is finished.

Generations of civil engineering students have passed through these portals bringing joy and enthusiasm and hard work. Now the students are gone and the faculty and staff have departed. Today, there is only silence.

One retired professor (Robert N. Bruce, Jr.,

## Body of knowledge —

In pursuing the ASCE Policy Statement 465 that states "the ASCE supports the attainment of a *body of knowledge* for entry into the practice of civil engineering at the professional level" the ASCE Committee on the Academic Prerequisites for Professional Practice developed a Body of Knowledge that was published in 2004.

The BOK is defined as the "depth and breadth of knowledge, skills and attributes required of an individual entering the professional practice of civil engineering. The first edition of the BOK has stimulated serious debate about the relevance of the education and practice of engineers. The BOK has been described as a productive forum for educators and practitioners to proactively determine how tomorrow's civil engineers will be prepared.

ASCE Policy Statement 465 — Academic Prerequisites for Licensure and Professional Practice — is currently available on the ASCE website at <u>www.asce.org/pressroom/news/policy.cfm</u>. The draft of the second edition of the BOK will be made available on the ASCE website July 15, 2007 at <u>www.asce.org/raisethebar</u>. We will have the chance to review it and provide our feedback to the Committee by October 1, 2007 at <u>comments@bok.asce.org</u>. The Committee's final report, the Civil Engineering Body of Knowledge for the 21st Century ASCE Board of Direction considered the proposal to establish a parallel ASCE 501(c)6 organization without losing its 501(c)3 tax exempt nonprofit status was discussed at length. This proposal that the Section Board had voted previously to oppose narrowly failed by 2 votes. The ASCE 501(c)6 organization proposal is considered to be very much alive with the strong support of the elected leadership in the upcoming national ASCE administration.

The Section's Disaster Recovery Committee acted to disburse \$1000 of the Section's Hurricane Relief Fund to the McNeese State University Student Chapter that has been operating heroically as has the University's faculty and staff under exceptionally adverse conditions.

PE) remains to close the doors observed only by a security camera. What is left are shadows, memories and accomplishments.

This moment in time demands to be noticed. Editor's note: I received this poignant note dated June 30, 2007 from Bob Bruce, The Catherine and Henry Boh Chair Emeritus in Civil Engineering — Tulane. This sad note of passage for many in the Tulane community of engineering alumni will surely be observed with the hope that it is not the final chapter.

(Second Edition), is scheduled to be published in September of 2008.

Editor's note: While I am sure that all input is certainly encouraged and valued, from my personal experience may I particularly encourage the practitioners in the spectrum of licensed civil engineers approaching 5 to 10 years of experience to respond. Those who are still close to their undergraduate education roots and may freshly sense its specific value and deficiency in launching them into their practice should consider this an opportunity. I believe that this can provide a valuable exercise in assessing one's professional development and at the same time significantly serve the future development of our profession.

## \* Quote \*

Continuing Education: ...we have what we need in the law with the requirement that the engineer practice within his area of competency... It is the age of political correctness... It is ceremony over substance... It (mandatory continuing education) is more about the engineer (engineering profession) trying to promote an image, and I am personally more concerned about substance than ceremony...

-Harold Williamson, PE, Member Washington Board of Registration for Professional Engineers... The University's engineering school facilities have yet to be brought back into service since Hurricane Rita. Its engineering program has been operating out of inadequate, temporary facilities. It is believed that this modest financial support will appropriately ease what is and will continue to be a very difficult journey for our student members in this Chapter.

Delivered to each civil engineering department supporting a student chapter was a new permanent wall plaque to be displayed in the departments. It commemorates the recipients of the Section's Distinguished Civil Engineering Student Award beginning with the year 2000 forward. The plaques will be updated as new recipients are named.

## **Ray DesOrmeaux honored**

E.R. (Ray) DesOrmeaux is selected by the national ASCE Committee on Student Activities as the 2007 ASCE Region 5 Student Chapter Practitioner Advisor of the Year. This recognition is "...for exemplary service and dedication to the University of Louisiana at Lafayette ASCE Student Chapter." What makes this recognition so poignant to Ray is that it was initiated by the nomination of the Student Chapter members.

The Student Chapter members easily recognized and described Ray's attentive and dedicated service in his role as their Practitioner Advisor in the nomination. Scott R. Hamilton, PE, Chair of the Committee on Student Activities, noted that the selection was based on Ray's "outstanding work and dedication... to the Chapter" and further that "the enthusiasm and commitment" like his "...produce excellent student organizations" like the Chapter.

Ray's "exemplary" services have also extended to the College of Engineering and the Department of Civil Engineering of the University of Louisiana at Lafayette — his alma mater. His efforts on behalf of the civil engineering students at the University not only include his Student Chapter advisory service he also serves as an adjunct professor.

The Section also has the benefit of Ray's dedicated service in its elected leadership where he has served on the Board of Directors over the last several years. The Section was dependent on Ray's trademark initiative and exemplary leadership when the remainder of the Board's membership was mostly caught up in the in the aftermath of Hurricanes Katrina and Rita. He maintained the continuity for the Section that was so desperately needed at the time. Ray, who is currently the Section's President Elect and the Chair of its Publications Committee, will succeed to the office of Section President for the 2007-2008 administrative year.

## - Career Benchmarks -

Section member **Norman E. Kramer**, PE, recently earned his professional engineering license in Louisiana. If you are in contact with him, please offer your congratulations on his accomplishment.

Louisiana residents Melanie B. Caillouet, PE, Warren H. Constant, PE, Lee E. Davis, PE, Angela G. Eymard, PE, Jonathan E. Fourrier, PE, and Michelle L. Mahoney, PE, recently earned their professional engineering license in Louisiana. They are civil engineers or in a related discipline and they are not members of the ASCE. A copy of this issue of the journal is sent to them as an informal introduction to the Section. If any of them wish to join and/or find out more about the ASCE, they are hereby invited to visit the ASCE national website, http://www.asce.org. If you are in contact with any of these engineers, please consider formally introducing them to the Section by inviting them to attend a branch membership meeting as your guest.

Section member and representative to the ASCE Region 5 Board of Governors, and past president **Norma Jean Mattei**, PE, was recently appointed by Governor Kathleen Blanco to serve on the Louisiana Professional Engineering and Land Surveying Board. She joins fellow Section members Kerry M. Hawkins, PE, Richard I. Durrett, PE, Rhaoul A. Guillaume, PE, Mark A. Jusselin, PE, and Ali M. Mustapha, PE, who also serve on the Board.

Section member and past president **Bobby E. Price**, PE, was elected to the ASCE membership grade of Honorary Member by the ASCE Board of Direction in April of 2007. This honor was predicated on his over 40 years of service and leadership in engineering education and in the profession. He has been a leader in the ASCE initiative to reform the future professional engineering education and licensure model in the

## Membership: Recruiting !#?@\* -

The Section has not had an active membership committee function in recent memory and it is reflected in the Section's performance in the nationally conducted annual membership recruiting contest between sections/branches - somewhere below also ran. It would seem to appeal to the intuition that personal recruiting — eyeballto-eyeball — in itself is a good thing. This is because it actively makes an opportunity for ---and evokes a conscious decision by - the prospective member who is approached. This is no small event because someone who cares enough about the ASCE and the prospective member makes the effort to personally approach and ask. The hard part is apparently making the commitment to do this. The easy part has to be the sale of the very apparent benefits of ASCE membership in terms of the substantial professional development support it provides both locally and nationally and that we experience as members.

As we are often reminded of the *truth*, the returns we gain from our various relationships



Norma Jean Mattei



Bobby E. Price

United States. Price has served in key leadership roles including either president or chairman of the National Society of Professional Engineers, the Louisiana Engineering Society, the Louisiana Engineering Foundation, the American Water Works Association Southwest Section; Vice Chairman and member of the Universities Council on Water Resources Committee on Research and Education in Water Resources Engineering; and member of the Louisiana Professional Engineering and Land Surveying Board. Price has a record of extensive community service and he has received numerous awards during his career recognizing his outstanding character and service.

Announced June 18, 2007, Section member **David P. Sauls**, PE, a principal engineer in the Baton Rouge firm of Louis J. Capozzoli and Associates was named a principal and the Baton Rouge Office Manager as the firm joined Geoengineers, Inc. as a subsidiary. Also named as principals of Geoengineers, Inc. were Section members **James M. Aronstein**, PE and **Charles L. Eustis**, PE. Capozzoli, specializing in geotechnical, transportation; water and natural resources, becomes the 16th office of the Redmond, Washington based firm in its nationwide operations and its base of operations in the Gulf South. The firms have a history of working closely and successfully on previous projects.

Editor's note: There are three disciplines that are licensed by the Louisiana Professional Engineering and Land Surveying Board and that may be considered closely related to civil engineering. They are the environmental, structural and architectural engineering disciplines. As of June 2007, the active engineering licenses conferred by the Board were approximately 5054 in civil, 725 in environmental, 87 in structural and 12 in architectural.

including memberships is directly related to how much we are willing to invest in them. The significant benefits of membership are not annually bestowed on a member by the organization for the price of the dues, they are earned by the member through participation. One's dues simply pay for the privilege of the membership and the many opportunities it offers for professional development that otherwise may not be available.

Whether the prospective member accepts or rejects a personal solicitation to join the ASCE, it will not pass as just another event or just another day. This will particularly be true of our significant others that place a great value in themselves as professional engineers and on their career as a professional endeavor. The weight of the responsibility on the individual to grow as a professional is no less as an insider or as an outsider to the ASCE and surely there are alternative ways to accomplish professional growth. Recruiting expedites getting these options weighed for both the prospective member and the recruiter.

It may be that many find recruiting similar to

ordinary sales — distasteful. It is uncomfortable because there is a tendency to take the rejection of our sales pitch as a personal rejection/failure. Giving this a little more thought, recruiting a prospective member to share our professional journey in the ASCE is actually a personal service to the prospective member whether our offer is accepted or rejected. Even if the opportunity for ASCE membership is summarily rejected, if the prospective member is the thoughtful and concerned professional we want to attract, important seeds have been sowed.

## \* Quote \*

Ethics: The most permanent lessons in morals are those which come, not of book teaching, but of experience.

-Mark Twain Experience: *Experience is the name everyone gives to their mistakes.* 

-Oscar Wilde

## **Financial self-defense: the most common investment scams and how to avoid them** *Submitted by Thomas R. Thurmond*

Every year, scams are becoming increasingly complex as con artists discover new, sophisticated ways to fleece the public. Unfortunately, even the well-known deceptions still fool victims. Whether new or old, con artists prey upon the same vulnerabilities in our human nature. We can better protect ourselves by first knowing what kind of fraudulent operations exist and how they function.

### Affinity fraud

According to the Securities and Exchange Commission\*, affinity fraud is an investment scam that preys upon members of groups, such as religious or ethnic communities, professional groups or the elderly, by exploiting the trust and friendships that exist within the group. Victims abandon their natural sense of caution and good judgment because the swindler pretends to be, or may be, one of the group. The most common affinity scams are pyramid schemes, which create the false illusion that an investment program is successful by taking money from a new investor and using it to make payments to previous investors.

### Prime bank schemes

Victims are taken in by the lure of a very high-yield, tax-free return that, supposedly, is only available to extremely wealthy individuals through off-shore trades of bank notes. You are required to execute confidentiality agreements and not consult an attorney, accountant or financial planner. The secrecy is exciting and makes you feel exclusive and important. There are no such legitimate programs. Once your money is turned over, it is gone — the only person enjoying a high-yield, tax-free return is the con artist.

## Personal information scams

We have all heard of identity theft: thieves steal your private financial information and use it to open credit cards in your name, buy a car, get a driver's license, open bank accounts and write bad checks. They can steal your information directly by taking your wallet, checks, financial statements or credit card receipts from your mailbox or trash can. Thieves can get the same information indirectly by hacking into computers, stealing client data while on the job or diverting your mail with a change-of-address form.

Frequently, victims will give an unscrupulous person their private financial information simply because they need help. The paperwork

## Section considers workshop

The Section leadership was approached by representatives of the ASCE Committee on Critical Infrastructure and ASCE Headquarters to consider jointly sponsoring a one-day workshop, webinar, training seminar and/or other function. It is anticipated that this event would attract the participation of an estimated 500 ASCE members from around the recent hurricane-affected areas of the Gulf Coast. The theme being considered at this time would encompass subjects that senior citizens must deal with for medical insurance claims and prescription benefits is overwhelming. Con artists may use the phone or email to pose as the agent of a legitimate health or life insurance company. They may offer to fill out forms, file claims, facilitate payments or straighten out a fake problem with your account, meanwhile asking to verify your social security number or your bank account number.

## Ways to protect yourself

- *Discuss with others.* Many investors have been spared tragedy because they had the good sense to ask an accountant, an attorney or a financial planner to review and evaluate an investment before getting into it. A licensed financial advisor can help you determine if the investment is suitable for you and your personal financial goals, and an attorney may see warning signs that you have missed regarding its legitimacy.
- Insist on written information on an investment product—and read it carefully. Ask tough questions and check out everything. Be very skeptical of an investment that you must keep confidential and is not in writing.
- Never let someone pressure you to make an immediate decision. Do not feel like you are missing an opportunity if you do not rush into an investment. Wise financial decisions take time to investigate and evaluate.
- Beware of strangers who guarantee spectacular profits and quick returns. These are hollow lures to encourage you to relinquish your money. Successful con artists can sound very professional and make the riskiest and strangest deal sound safe and legitimate.
- Never give out your personal financial information unless you have initiated the contact. Invest in a shredder to destroy credit card offers and any other papers you discard that contain private information.
- *Report fraud.* Do not let fear or embarrassment keep you from telling the authorities about abuse. Frequently, victims keep quiet because they feel humiliated for falling for the scam and do not want their family or friends to find out. Reporting a scheme will help others to not fall prey.

### For more information

The web sites for the Federal Trade Commission, the Securities and Exchange

such as *disaster resilience* and best practices in the long-term recovery of critical infrastructure following a disaster.

The schedule for this event is tentatively being considered for sometime in mid-August in advance of — and to avoid conflict with — the Louisiana Civil Engineering Conference and Show sponsored by the New Orleans Branch in mid-September. The proposed location tentatively being considered is the Baton Rouge area Commission and the North American Securities Administrators Association contain updated information about financial scams. If you would like to learn more, please feel free to contact the author.

\* U.S. Securities and Exchange Commission, "Affinity Fraud: How To Avoid Investment Scams That Target Groups," March 11, 2005, http://www.sec.gov/investor/pubs/affinity.htm.

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# \* Quote \*

Professional liability: As long as indemnity payments — those payments to rectify damage or reimburse loss — continue to be high, so will the cost of professional liability insurance. Risk management efforts and adequate compensation for appropriate services are the keys to bringing down the cost of claims, and subsequently, insurance costs.

- Frank Musica (risk management attorney) Victor O. Schinnerer and Company, Inc. *Structural Engineer 1/05* 

though the New Orleans area is not being ruled out. In response to the May 1, 2007 inquiry made by Section President Timothy M. Ruppert, the elected leadership of the Section expressed its strong interest in supporting the one-day event in either the Baton Rouge area or New Orleans area. The elected leadership of the Baton Rouge Branch expressed its interest in supporting and participating in hosting the event if it is scheduled for the Baton Rouge area.

## What leaders are saying –

### Ethical responsibility

In her Engineering News Record sponsored blog article titled, "Should Engineers Become Involved in Politics?" ASCE past president Pat Galloway is concerned that civil engineers do not recognize the link between public policy and their ethical responsibility to protect the safety, health and welfare of the public. Further, that civil engineers are under the misconception that they are banned from some political activities as members of the profession and the ASCE. Galloway believes that the ASCE 501(c)3 tax exempt, nonprofit organization status either prohibits or inhibits the effective participation of the ASCE in the political arena. She advocates that the ASCE establishes a parallel 501(c)6 organization without losing its 501(c)3 status. She believes that this will facilitate its participation in the political processes by gaining the ability to legally form a PAC so the ASCE can become more effective in politics.

I believe that the ASCE acts with a bias toward the interest of its business owner minority — its most influential members — and usually but not always in the best interest of the profession or the public. (If you question this, read any of the various editions of the ASCE codes of ethics imposed by the business owner minority on the majority — primarily their own employees — for decades before the ASCE accepted a U.S. Department of Justice consent decree in the 1970s to cease certain antitrust practices.) The

## Moral certitude -

As an avid reader of the opinion and editorial page, I sometime get hypnotized by the rhythm of the regular political discourse from the liberal and conservative pundits especially in the runup to — and aftermath of — something like a national election. In the midst of all this, two pundits caught me off guard as they waxed and waned philosophically about something besides politics.

One article was on the subject of *tolerance* and being respectful of other's opinions. This is something that the pundits to varying degrees do not appear to me to practice that well among themselves. However, the concern centered more around the shouting heads on television news. A particular concern was the practice of arbitrarily and unreasonably *stereotyping* one's opponents to excuse their wrongheadedness by discounting and disrespecting their views.

The other article was about *moral certitude* that one may assume as part of his/her presumed moral fiber. There was concern expressed that out of moral certitude those who exercise some measure of power over others make decisions and policies that would appear to help the pure — those with whom they agree — and harm the evil — those with whom they disagree. If confronted, one with a posture of moral certitude is reassured that his decisions are unbiased and honest, and will aver — never doubting his own

American Council of Engineering Companies and the National Society of Professional Engineers both operate as 501(c)6 organizations effectively serving the engineering business lobby. Could it be that Galloway is in the wrong organization if political action is her principal interest? In my belief, it is neither necessary nor appropriate for the ASCE to change its character to accommodate the political appetite of some of its members.

### Call to action

A recent appeal by Section President Tim Ruppert hit a resonant chord in my personal sense of ethical responsibility as a professional engineer. The appeal was for his fellow ASCE members to consider participating in the political process as a necessary part of their ethical obligations and more particularly to attempt in a nonpartisan way to influence lawmaking that may otherwise adversely affect public safety, health or welfare.

We as engineers are often necessarily, substantively and intimately knowledgeable of and involved in — public policy implementation. This gives our profession a natural opportunity to play a significant role in developing public policy. How can we consider ourselves a profession and be content with little or no service to the public we are obligated to serve by encouraging the development of effective public policy related to engineering?

I am regularly astonished by the effectiveness of celebrities with no apparent credentials cashing in on their celebrity. They often pursue political agendas that involve complex engineering and scientific issues for which they appear to bring nothing of substance to the table other than celebrity. I do not question the right of a citizen to legally use any personal asset that gives his/her cause traction in the political arena. The fact that movie/television/music stars, war heros and star athletes have such traction in influencing lawmaking that affects engineering in public policy is not something to be resented. However, it should be seriously regretted if engineers do not effectively participate in the lawmaking and thereby leave a vacuum for those of questionable competence to be more effective advocates.

### ASCE 501(c)6=PAC

Whew! The ASCE Board of Direction rejected the proposal to establish the parallel ASCE 501(c)6 organization. I once inappropriately referred to the proposed ASCE 501(c)6 organization as the *evil twin* of the National Society of Professional Engineers when it would essentially be of the same character. It seems more appropriate for me to think of the ASCE 501(c)6 organization intended to gain political influence and support for the ASCE political agenda as the *evil twin* of our existing and more

(Continued on Page 21)

sincerity — that any disadvantage to those affected by his decision could never be intentional. *Never say never.* 

Perception if anything can be everything. After reading these surprising philosophical excursions with interest, a later newspaper account of an interview with retiring Louisiana Senator John Breaux discussed some of his personal philosophy. One important exercise he believes in is to have regular *civil* discussions with those with whom he disagrees about the differences they have. This says a lot about John Breaux. It may explain in part how or why he was able to stay above much of the destructive partisan bickering and wrangling in the Senate and witnessed almost daily in the news. It further explains how he was able to maintain his focus on the important business and his effectiveness as a deal maker in a highly charged, partisan political environment.

From a long and poor personal experience, I believe that there is great wisdom in John Breaux's expressed belief and past practice. Being intentionally face-to-face and eyeball-toeyeball with someone I disagree with has a moderating affect on my sometimes less than civil temperament. It tends to open me up to be more receptive to the ideas of another that are outside of the independent pursuit of my own.

The effect if not purpose of such a civil,

frank and open discussion would seem to be to gain a deeper appreciation of the differences, to find where there is mutual agreement and possibly to find new agreement where none existed before through a mutual, better understanding of the issues. This is not agreement by compromising one's principles or beliefs. It is agreement through growing and applying one's principles and beliefs in the light of a better understanding of one's self and others. This can be accomplished in part - I believe - by critically and honestly assessing my personal values compared to those of another through genuinely trying to understand and appreciate our differences. As Breaux points out, this will not eliminate all differences but improve understanding. Vive la difference!

I believe that my failure to develop and exercise strong civil relationships with subordinate, superior and peer alike leaves voids in me and in my — our — effectiveness like a jigsaw puzzle with a few pieces missing. There are few experiences I can compare with cultivating and exercising civil relationships, particularly with discussing differences, where I have one of those *Aha!* moments of clarity by better understanding myself and another — another piece of the puzzle found.

## Flexibility, innovation and effectiveness -

The long standing and continually active controversy regularly reported in the news media concerning the horror expressed by the environmentalists community concerning the relaxation of federal environmental regulations continues. The news media appears to side closely with the environmental community and together they are portrayed and discounted by their opponents as surrogates of the liberal political spectrum in general. Blame for the horrifying relaxation of the environmental regulations is abundantly heaped on the business community and its alleged attempts through the Republican administration to avoid meeting the environmental regulations. Together the business community and the administration are portrayed and discounted by their opponents as surrogates of the conservative political spectrum in general.

The environmentalist community is alleged to prefer the regulation of each individual source of pollution to the same environmental cleanup standards irrelevant of the cost to do so. This is portrayed by their opponents as arbitrary and intentionally punitive toward business interests. The business community prefers *flexible* environmental regulations it alleges are equally effective and economically more viable. Such flexible regulations allow the removal of pollutants from the sources where they are least costly to remove while allegedly meeting the same overall total environmental cleanup goals. As an example, businesses may buy and sell environmental cleanup credits. The businesses with costly environmental cleanup obligations can buy these credits at a lesser cost from the businesses with less costly environmental cleanup obligations which accumulate environmental cleanup credits

## (Continued from Page 20) -

benign ASCE 501(c)3 tax exempt, nonprofit organization. I believe the constraints placed on the political activities of the ASCE 501(c)3organization result in more appropriate reliance on influence derived from its integrity as a competent and trustworthy ally of federal statutes and rules that support good engineering. This is a healthy separation as opposed to a special interest PAC supporting politicians.

I am opposed to enlarging the ASCE political footprint in Washington as a more influential component of the existing special interests known for professional featherbedding like mandatory qualifications based selection for professional engineering services on federal projects? Some lucky recipients of these non costcompetitive, negotiated contracts have acted with a lack of regard for the only value claimed to be provided by the QBS process. They did this by demonstrating incredibly poor judgment in selecting their professional engineering subcontractors using indiscriminate, cutthroat, costcompetitive means. This serves to raise questions about the validity of QBS and the integrity of our profession.

The current ASCE 501(c)3 organization with less raw purchasing power than an ASCE 501(c)6 organization still has its *multipliers* such as the good name of the ASCE that I view as somewhat tarnished by claims that its agenda is by exceeding the environmental cleanup standards at their source and at their lower cost. This is a macrocosm of the similar argument for each individual source of emission on an industrial site having to meet the same environmental cleanup standards rather than placing the entire site under a *bubble* and meeting the total environmental cleanup standards allowing the removal of pollutants from the individual sources where it is least costly.

A similar flexibility issue occurred in the environmental engineering community related to environmental cleanup contracts. The engineering for environmental cleanup projects is conventionally accomplished in advance of the contracts for the cleanup process being specified in the contract and followed by the contractor. More recently the same efficiency and effectiveness realized in the *design/build* contracts used for the construction of large complex facilities was sought in environmental contracts by following a similar process referred to as performance-based restoration. In performance-based restoration, the goals and performance-based objectives are specified based on "...a well thought-out plan; clearly defined and achievable objectives; and teaming between the contractor, the... (client) and the regulatory community." (CE News, April 2005, pp. 27-30)

It appears that it was *easy* enough for the environmental engineering community to recognize the problem, draw a logical conclusion and then facilitate a change in the paradigm for environmental cleanup projects. This led from the pre-engineered environmental cleanup contracts specifying the process to be performed by the contractor to the performance-based environ-

supported by 1000s of its members who may be either unaware of — or actually disagree with it. I believe this lobbying tactic, also used by the NSPE and its state chapter, the Louisiana Engineering Society, is an abuse of my membership in them. The claim that a committee activity represents the *whole* organization, noting the size of its membership and thereby insinuating general support (including mine) without permission or consultation, is much more offensive to me than is the use of my dues for lobbying.

## Splitting hairs

I believe that I have been appropriately corrected when I aver that a PAC contribution to an election campaign fund is tantamount to purchasing political influence. I was admonished that PAC contributions are not the purchase of political influence such as a vote in the U.S. Congress - such a purchase is illegal. However, in most of the debate and discussion that I have observed, the justification of a PAC appears to center around the quid pro quo political influence an organization expects to gain from a substantial enough PAC contribution to an election campaign fund. Little energy seems expended on discussing the value of what appears to be the legitimate purpose of a PAC - supporting the election of candidates that appear to share the values and interest of the organization. Making mental cleanup contracts requiring the contractor to provide the engineering to develop and specify the process necessary to meet specified goals and objectives and then perform the resulting environmental cleanup process. This gives the contractor the opportunity to effectively use the inherent in-house experience and resources available, and the incentive of ownership to successfully execute the environmental cleanup process.

The services of the environmental engineering community are strategically in the implementation stage of the environmental regulations whether they are inspired and controlled by the environmentalist or the business community. Even if it was not that easy to change the paradigm for environmental cleanup contracts, it appears that there is an equally important opportunity for the perennial and generally apolitical environmental engineering community to quell what appears to be chronic and corrosive political hysteria that surrounds its services. There may be an opportunity to act in the role of an unbiased expert facilitator by objectively studying the value and impact of the technical and economic issues raised by the politically contentious alternatives in regulation. This may move the discourse away from what appears to be little more than political wrangling fueled by the technical assessments of the experts whose conclusions often appear to be predictable and compromised by their alliance with the political interests. Unbiased technical assessments would appear to have a better chance to found a more thoughtful discourse that may lead to more stable, win-win policy solutions.

contributions to a election campaign fund after a favorable vote and after a discreet period of time — of course — and the common practice of making contributions to both friend and foe politicians alike indicates to me, that there may be a *quid pro quo*. PAC contributions to me appear to be the same as *gaming* in Louisiana with some unknown, hair-splitting difference between it and *gambling* that is illegal in Louisiana. This fine art of political subtlety violates my personal sense of ethics, and worse, it gives me a headache.

## Did you know . . .

...that one project being envisioned is a trans-Atlantic - New York-to-London - neutrally buoyant, vacuum tunnel submerged 150 to 300 feet below the surface and anchored to the seabed. It would provide the means for a magnetically levitated train to reach speeds upward of 4000 mph and traversing the Atlantic in a little less than an hour. Its estimated cost is between \$25 million to \$50 million per mile, and safety is an issue. Given is the premise that humans are driven to build on a grand scale requiring substantial resources and organization and provided the technology is available. When such extreme engineering projects are visualized they often give insight into the cultures that come up with them. - Popular Science 4/04

In 2005, the year that Hurricane Katrina struck, the project was under severe budgetary pressure at the Federal and local level. Significant construction still needed to be accomplished to achieve completion of the project by 2015.

## System evaluation

Project engineers recognized that many changes had occurred since the project was authorized. In the early 1990s, they were looking for tools to help them evaluate how these changes may impact project performance. One of the tools selected was the Advanced Circulation Model (ADCIRC) which was a complex hydrodynamic model that could be used to estimate storm surge at various locations along the coast. In 1994, the Corps began to work with the developers of the model to refine the model so that it could more accurately estimate storm surge effects. This began a long and technically difficult process that concluded in 2004 when the model was subjected to external review by a panel of experts.

After extensive review, the ADCIRC model was deemed sufficiently accurate to allow the engineers to use it to estimate storm surge potential in coastal Louisiana. The goal was to evaluate the Lake Pontchartrain and Vicinity project to determine how it would perform under the design parameters. This effort was under way when Katrina struck. Ultimately, this effort would have likely resulted in recommendations of significant changes to the project to account for the many changes that had occurred since the project was first authorized. These changes would include impacts of

- coastal land loss
- datum changes

- sea level rise
- subsidence and
- increasing strength of hurricanes

that would have redefined the characteristics of the SPH.

One other effort was under way. In 1999, Congress authorized a study to determine if Category 4 and 5 protection projects were feasible in southeastern Louisiana. The Corps completed a reconnaissance study in 2002 that recommended proceeding with a detailed feasibility study. In 2002, Corps representatives met with state and local officials to discuss proceeding with the detailed studies. This was important because under Federal guidelines, such a study would have to be cost shared on a 50-50 basis. Local officials maintained that they did not have funds to support such a study and further emphasized that it was more important to continue with the existing projects and try to complete them as quickly as possible. So by 2005, the feasibility study had not yet started and questions existed about its future.

In considering the history of the Lake Pontchartrain and Vicinity project, it is attempted herein to provide a synopsis of how the project evolved since its inception and the reasons for the changes that have occurred. A much more detailed report comprehensively documenting the evolution of the project has been prepared by independent investigators who were retained by the Corps. The report titled Hurricane Protection Decision Chronology was prepared by Leonard Shabman and Douglas Wolley and it was released July 11, 2007. For this more comprehensive analysis of the project evolution, the report is available at http://www.iwr.usace .army.mil/inside/products/pub/hpdc/hpdc.cfm



Figure 3. Map of New Orleans reflects the hurricane surge protection plan in 2005 near when Hurricane Katrina occurred. It evolved out of the Corps' plan originally approved by Congress in 1965 and that was substantially modified because of environmental concerns and local social and political issues.

### Lessons for the future

If the project as it was originally envisioned by engineers in the 1950s is compared to the project as it existed at the time Hurricane Katrina occurred, one will see some remarkable changes.

The concept of stopping the storm surge from entering Lake Pontchartrain was transformed into stopping the storm surge at the lakefront of the city and ultimately evolved to allowing the storm surge into the outfall canals. These changes and others resulted from many different forces. These include

- environmental concerns
- social and political pressure
- budgetary constraints
- schedule pressures and
- engineering decisions.

All played a significant role in how the project evolved over time. It is reasonable to expect that these same pressures will impact almost any project that has a size and scope similar to the Lake Pontchartrain and Vicinity project. One such project has recently started as a direct result of the damages inflicted by the hurricanes of 2005.

In the wake of Hurricanes Katrina and Rita, Congress directed that the Corps to prepare a report that will address Category 5 equivalent hurricane protection that will look at a full range of measures to address

- flood protection
- coastal restoration and
- hurricane protection

for the entire length of coastal Louisiana. That direction resulted in the Louisiana Coastal Protection and Restoration (LACPR) project which was initiated in January 2006. At the same time, the State of Louisiana began work on a Master Plan for the Louisiana coast that encompasses many of the same initiatives as the LACPR. Work on the LACPR report and the State Master Plan has resulted in unprecedented levels of cooperation between the Corps and the State of Louisiana. The State Master Plan proceeded on a somewhat faster track and has been approved by the Legislature. The Corps LACPR report is due to Congress in December 2007. The team that is preparing the report includes engineers and scientists from the Corps and from around the world. The report will address both structural and non-structural alternatives, coastal restoration measures and internal drainage issues. In addition, the report will be reviewed by an external review panel prior to being submitted to Congress.

It is possible that projects could be proposed that would dwarf the size and scope of the existing projects. It is certain that any project that is authorized as a result of this report will be subjected to many of the same pressures that faced the designers of the Lake Pontchartrain and Vicinity project. *Will there be environmental concerns?* Any large project in coastal Louisiana has environmental issues and concerns. To address these concerns, an environmental impact statement is being prepared and is scheduled for

(Continued on Page 23)

## Did you know...

...that a method was developed for traffic signals to independently configure themselves to improve traffic flow? It is modeled after principles found in the self-organization behavior of social insects. The technique, developed at the Free University of Brussels by Carlos Gershenson, builds on a method developed in the United Kingdom to coordinate traffic at remote signalized intersections. The number of vehicles approaching the traffic signal installation is detected and multiplied by time increments. The signal timing is programmed to change once a certain threshold is reached so that the portion of green time is increased as the number of vehicles approaching or waiting at the signal increases. Gershenson adapted the technique to work in heavy traffic by adding a minimum green time to the program. Rather than have the traffic signals at a series of intersections communicating with each other, this method facilitates indirect coordination as each traffic signal, like social insects, responds to local traffic conditions to independently and efficiently organize their individual timing in this environment.

- Technology Research News 6/05

## (Continued from Page 23)

completion in July 2008. Will there be budgetary constraints? While project costs are still being developed, it is likely that one of the greatest challenges will be finding the resources to pay for projects that could be proposed. Engineering and design of such large projects will present new and difficult challenges to the engineering community. The founding of large structures in soft soils, design of unique structures to handle the largest surge events, and the large scale restoration of coastal wetlands are some of the technical issues/challenges that will have to be addressed. Will there be social and political pressures? It is hard to imagine that projects of such large scope and impact would not face these pressures.

Invariably, engineers will lead the effort to implement these future projects. Certainly sound engineering and science are the basic foundation for any project, but many of the issues that engineers will face involve problems that cannot be solved independently with technical solutions. To be successful, engineers must understand and adapt to the complex issues they face, and formulate the responsive means that are necessary to effectively address them. When it is observed how the Lake Pontchartrain and Vicinity project evolved over time, the reasons for the changes that occurred must be understood in an attempt to anticipate and possibly avoid similar impacts on future projects.

## References

<sup>1</sup> National Hurricane Research Project Report #33, November 1959.

<sup>2</sup>Letter dated January 4, 1978 from Orleans Levee District to Louisiana Department of Transportation and Development.

<sup>3</sup> Government Accountability Office report dated August 17, 1982.

## THE LOUISIANA CIVIL ENGINEER / AUGUST 2007

## — Calendar of Events —

September 13-14, 2007	New Orleans Branch Louisiana Civil Engineering Conference and Show, Kenner
September 13-14, 2007	ASCE Seminar * Design and Evaluation of Highway Bridge Superstructures Using LRFD, Dallas, Texas.
September 13-14, 2007	ASCE Seminar * Geotextile Tube Designs. Applications and Case Histories, Houston, Texas.
September 13-14, 2007	ASCE Seminar * Seismic Repair and Rehabilitation of Concrete and Masonry Structures Using FRP Composites.
September 13-14, 2007	ASCE Seminar * Environmental Bootcamp for Engineers
September 14, 2007	Louisiana Section Annual Meeting, New Orleans
September 14, 2007	ASCE Seminar * Seismic Design of Liquid Storage Tanks, New Orleans.
September 16-19, 2007	ASCE Conference * International Symposium on Fluid Control, Measurement and Visualization, Tallahassee, Florida.
September 19-21, 2007	ASCE Seminar * Structural Design of Buildings and Industrial Facilities for Blast Loads and Accidental Chemical Explosions, Atlanta, Georgia.
September 20-21, 2007	ASCE Seminar * Structural Design of Residential Buildings Using the 2006 Residential Building Code, New Orleans.
September 20-21, 2007	ASCE Seminar * Design of Cold Formed Steel Structures, Dallas, Texas.
September 20-21, 2007	ASCE Seminar * Earth Retaining Structures Selection, Design, Construction and Inspection, Dallas, Texas.
September 20-21, 2007	ASCE Seminar * Water Hammer in Transmission and Distribution Systems, Houston, Texas.
September 26-28, 2007	ASCE Seminar * Structural Vibration Analysis, Design and Troubleshooting, Atlanta, Georgia.
October 4-5, 2007	ASCE Seminar * Comprehensive Site Design Workshop, Atlanta, Georgia.
November 1-2, 2007	ASCE Conference * Civil Engineering Conference, Orlando, Florida.
November 1-2, 2007	ASCE Seminar * Soil and Rock Slope Stability, New Orleans.
November 1-2, 2007	ASCE Seminar * Structural Condition Assessment of Existing Structures, Memphis, Tennessee.
November 1-2, 2007	ASCE Seminar * HEC-HMS Computer Workshop, Austin, Texas.
November 8-9, 2007	ASCE Seminar * Progressive Collapse Mitigation: Practical Analysis Methods and Proven Solutions, Dallas, Texas.
November 15-16, 2007	ASCE Seminar * Wetlands and 404 Permitting, New Orleans.
November 16, 2007	Deep Foundations Institute Specialty Seminar — Helical Foundations and Tiebacks, New Orleans. For more information visit <u>http://www.dfi.org</u> .
November 28-29, 2007	ASCE Seminar * Design of Foundations for Dynamic Loads, Dallas, Texas.
November 28-29, 2007	ASCE Seminar * Design, Construction and Renovation of Masonry Structures, Atlanta, Georgia.
March 9-12, 2008	ASCE Conference * Geocongress 2008, New Orleans.

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Figure 5. Typical urban arterial system roadway in Louisiana with driveways located on the arterial and near the intersection. (FHWA Louisiana Division.)



Figure 6. An intersection with driveways located on the lower functional system roadway and consistent with the principles of access management. (Phil Demosthenes, Parametrix Consulting)

### (Continued from Page 9) -

turning vehicles in their path. There is little doubt that these access points are a design deficiency that contributes to Louisiana's high crash rate.

As an alternative, many states now require a corner design similar to that shown in Figure 6. In this example, driveways are only allowed on the lower functional roadway. All traffic seeking access to the corner business, including the opposing traffic, is required to use the signalized intersection. Once drivers pass through the intersection there are no access conflicts encountered and speeds can safely increase. Along with being significantly safer, this design is aesthetically pleasing and can provide the corner business with greater visibility to the higher volume of traffic that can use the arterial. The claim that corner businesses suffer economically if access is not provided to the adjacent higher classification roadway has not been substantiated. Better operational performance of the arterial leads to reduced travel delay, greater vehicle throughput and reduced crashes. These factors will expose the business to higher traffic volumes, resulting in a larger potential market area.

An arterial is normally designed with the physical characteristics that lead the driver to perceive that it is a road that can be driven at high speed. If access control does not match this driver perception, high speed inter-city traffic mixes with low speed, turning traffic. This creates large speed differentials that result in an increase in crash rates and severity. This same condition leads to driver frustration, lower average speeds, higher travel times and poor overall operational performance of the arterial.

### Traffic operations

As with safety, research and field data covering several decades point to the conclusion that the flow of traffic is impacted by the degree that access is controlled and managed. As traffic volumes and speeds on a roadway increase, turning vehicles cause disturbances to traffic flow that lower average speed and break up platoons of vehicles. This in turn reduces the gaps available to entering vehicles and reduces the effectiveness of signal coordination. Consequently, overall delay increases for all drivers.

### (Continued on Page 25)



Figure 4. Bar chart showing the relationship between access density and the percent increase in vehicle crashes. (NCHRP Report 420: Impacts of Access Management Techniques. TRB, National Research Council, Washington, D.C., 1999.



Figure 7. Bar chart showing the relationship between access density and the reduction in free-flow speed. (Table 7-5; 1994 Highway Capacity Manual)

### (Continued from Page 24) -

Derived from the *Highway Capacity Manual*, Figure 7 provides access density adjustment factors for level-of-service determinations. It demonstrates that average free-flow speeds are reduced approximately 2.5 percent for every 10 access points up to 40 access points per mile in one direction. As the number of full median openings increases, turning interference will increase and speeds can be expected to decrease significantly.

The density of signalized intersections also impacts traffic operations. The aforementioned Colorado demonstration project compared signalized intersections spaced at ¼ mile intervals with one single full median opening between each intersection, to signalized intersections spaced at ½ mile intervals with only right turn access between intersections. The corridor with signals spaced at ½ mile intervals had a reduction in vehicle-hours of delay of over 60 percent and vehicle-hours of travel of over 50 percent as compared to the other roadway. This was in spite of having higher entering volumes at the ½ mile spaced signalized intersections.<sup>8</sup>

Several studies conclude that a 4-lane divided roadway having signals installed at a uniform <sup>1</sup>/<sub>2</sub> mile spacing can carry the same traffic volume as a 6-lane divided roadway having signals installed at a uniform <sup>1</sup>/<sub>4</sub> mile spacing. In either case, as signal placement becomes less uniform, road capacity is significantly reduced.<sup>9</sup>

Signals typically proliferate on a developing corridor with unmanaged access because average speeds are reduced, natural platoons dissipate and gaps are no longer available. Signal placement then becomes a matter of interrupting traffic flow simply to create a gap for turning vehicles in to and out of adjacent properties. In this environment, placement often becomes arbitrary with non-engineering factors playing a role in determining signal location. This often results in unplanned, non-uniform signal spacing which further reduces speed and capacity.

For Louisiana, the ability to quickly and safely evacuate populations in its at-risk coastal parishes is vitally important to the safety and welfare of its citizens. Often, the principal arterials that have the potential to move large volumes of traffic cannot be relied on to perform this function because access has not been properly managed. This not only applies to long stretches of intra-state roadways but to key arterials that may be short in length but play a vital role in connecting Interstates and other expressways. Arterials with access densities approaching 60 to 80 access points per mile cannot be properly controlled by law enforcement during an evacuation. There are simply not enough law officers and national guardsmen to control every access point when access densities are this high.

The geographic and ecological features of a coast line often place their own limits on the alignment and interconnectivity of the roadway system. Coastal states that are prone to hurricanes and other disasters cannot afford to limit options that would otherwise allow emergency managers to utilize the full capacity of a state's transportation network when developing and executing mass evacuation plans.

Economic

Unlike the known effects on safety and traffic operations, the research and field data on the economic impact resulting from poorly managed access is not as mature. The economic performance resulting from the access management projects implemented in the 1980s and 1990s is being evaluated and studied. The preliminary conclusion is that access management and the benefits that accrue have a significant impact on the economic performance of local communities and the states. In fact, it is likely that the economic benefits that have been previously reported are too conservative because a number of indirect economic benefits have not been fully considered. Research in this area is very active and better information should be available over the next few years.

The strongest relationship between access management and economic performance is the impact that travel times have on the market area of a business. Generally, it has been found that as average speed is reduced by 1 percent, the trade area of a business is roughly reduced by 2 percent.<sup>10</sup> Given that each access point on a corridor reduces average speed by at least 0.25 percent, it is estimated that each access point reduces the trade area of businesses in the corridor by at least 0.5 percent. The impact is much greater if other negative features are located on the roadway such as full median openings, excessive and poorly spaced signalized intersections, and poor access management on other roadways in the trade area.

Along with the direct impact on businesses in a corridor, there is a large indirect impact on the economy of the state. With an abundance of very large ports and railroad terminals, the Louisiana highway transportation system supports one of the largest multimodal movements of freight in the Nation. There is likely a large opportunity cost associated with unpredictable travel times associated with poor access management on these arterials and intermodal connectors. Unfortunately, these related costs probably impact Louisiana's economy far more than they would in states with similar access management problems.

Access management techniques appear to have a positive impact on reducing sprawl. Maintaining appropriate access density on high speed/volume arterials has the effect of reducing or eliminating strip development, improving the connectivity of land uses and encouraging the clustering of land uses around the lower speed intersecting collectors.<sup>11</sup> Pedestrian, bicycle and transit mobility are better facilitated because the supporting infrastructure can be integrated in the lower vehicle speed environment. It is difficult to imagine how other *anti-sprawl* and aesthetic initiatives such as smart growth and strict architectural standards can be successful in an environment where access is not managed.

Access management and governance

Another implication of the roadway functional hierarchy shown in Figure 2 is that in order

(Continued on Page 26)

## Did you know...

...that structural engineers and researchers have been working on security for decades through experimental research, vulnerability assessment software, site layout criteria, and other efforts? Most of the information is government-funded, unpublished, and may be of enormous use to practicing engineers, but most secure design guidance is relatively inaccessible and often classified or given limited distribution. There are mature software tools developed by federal agencies for protective design, but use is restricted. Design standards would be improved by the dissemination of procedures for the design of structures to resist attack.

- Structural Engineer 4/04

...that graduate engineering enrollment according to a National Science Foundation report reached its all time high — approximately 0.5 million — in 2001? U.S. citizens and permanent residents increased first-time graduate enrollment nearly 14 percent while foreign firsttime graduate enrollment declined 7.9 percent in 2002. The decline in foreign graduate students continued in 2003. They may be discouraged by the post-9/11/01 visa restrictions and may be opting to study in Europe and Canada where graduate schools are seeing an up-tick in enrollment commensurate with the approximate 2,000 student drop in the U.S.

- EE Times 7/19/04

...that women are earning 20 percent of the engineering undergraduate degrees — the lowest percentage of women graduates in any profession — and they make up 11 percent of the engineering workforce?

## - EEE Spectrum 10/04

...that building information modeling (BIM) software that replaces the conventional 2-dimensional building construction contract documents with 3-dimensional documents is gaining ground in the fields of architecture and building design. One of the greatest benefits of BIM is the incorporation of real-world data to enhance the accuracy, quality and speed of a building project, and the facilitation of the operations and maintenance management of buildings so constructed. It has been used for complex projects that could not otherwise have been constructed. The adoption of BIM in conventional building projects will be predicated on the willingness of the disjointed building construction industry to standardize around 3-dimensional modeling and the related technologies. BIM is expected to result in more accurate as-built documentation by centralizing the building process on a digital document that is reworked throughout design and construction. The use of BIM will require designers to take back their responsibilities and the commensurate liability exposure that has been deliberately fragmented and disbursed to contractors and other building professionals in the past.

- By David Becker CNet News.Com 10/04/04

# **PROFESSIONAL LISTINGS**



## (Continued from Page 25) -

to maintain the access-mobility relationship, access should only be granted to adjacent intersecting roads with a lower functional classification. Arterials should only connect to the Interstate highway system and collectors should only connect to arterial systems. Generally, property should be accessed via local roads and to a lesser extent the collector road system.<sup>12</sup> Except in rural environments where access spacing is large and generating volumes are minimal, direct access to property from the arterial road system should not occur.

Given that different functional systems serve the unique needs of different government jurisdictions, a comprehensive access management policy also defines the relationship between and among sovereigns and private entities. For example, if the arterial system that serves the State's need for intra-state travel is only accessed by the Interstate and local collector systems, then the State would limit its interaction to Federal and local governments. Private entities would normally interact exclusively with local governments since the connections to property would occur by way of collector or local road systems. Since local jurisdictions in Louisiana manage most aspects of land use including property development and infrastructure planning, it is more efficient and effective if the local government also manages access to the transportation system.

In order to build and maintain an optimized transportation system, local land use decisions and the transportation needs of all levels of government must be addressed. These needs are best accommodated by properly managing the access connections between functional road systems through a federal, state and local integrated planning process. This provides for a division of responsibility that best aligns with the governance and taxing authority of these jurisdictions.

It is acknowledged that there are important limitations to managing access such that the functional hierarchy of roadways is maintained. A chief obstacle is the limited ability of local governments to properly construct their collector road system. Since local authorities in Louisiana generally use sales tax from developments to fund road improvements, the current financing structure is not conducive to developing wellplanned collector systems before the construction of large, traffic-generating developments. Bonding of potential revenue to build a supportive local road system based on anticipated development requires a very complex risk analysis and decision-making process.

While allowing unfettered access to arterial systems will damage the economic vitality of a community, the immediate and localized riskreturn calculation supporting an individual access point is a rational economic decision. This economic incongruence is a fundamental reason why access management programs are difficult to implement and may have organized opposition. Leadership and participation from government and the private sector are required to ensure that the broader economic benefits of access management are not entirely subordinated to short-term decision making. States that have successfully implemented access management programs have been multi-jurisdictional in scope and inclusive of a broad range of business functions and private organizations.

Implementing an access management program

Developing and implementing an access management program is very similar to a business process reengineering effort. There is a broad scope of organizational functions that must be documented, evaluated and changed. For this reason, most states and local governments have found that a formal process is necessary to manage the changes in the diverse business functions that are inevitably required. Important issues that touch all parts of state and local governments include

- engineering design standards
- the state's legal framework
- real estate policy
- state and local permitting
- traffic impact studies
- planning processes
- appeals and variances
- enforcement
- coordination with local jurisdictions and
- other areas depending on the unique characteristics of a state.

However, there are elements of an access management program that are common to those States with active programs. A key element is the development of access categories with defined standards based on the characteristics of the roadway. These categories form the basis of an access classification system that is usually implemented through an *access management code*. Once implemented, the process of overlaying access categories over the current State road system is performed. Given the impact on land use and development, this is typically done with intensive local involvement. Once an access classification system has been developed and roadways have been classified, current business processes must be reviewed and usually changed or refined to ensure access standards are properly and uniformly applied.

Given the breadth of business functions and activities that must be addressed, state and local governments typically form steering and advisory committees that can manage the implementation of process and policy changes. Guidance and oversight from the executive levels of management are required. Without such support, it is unrealistic to expect the obstacles that will appear from across organizational functions can be overcome. However, the benefits of such an effort are well worth the costs.

### References

- <sup>1</sup> Making the Grade in Louisiana: An Analysis of the Ability of Louisiana's Transportation System to Meet the State's Need for Safe and Efficient Mobility. TRIP, a transportation research group, website: www.tripnet.org
- <sup>2</sup> Access Management Manual. Transportation Research Board of the National Academies, Committee on Access Management, website: www.accessmanagement.gov
- <sup>3</sup> The Access Control Demonstration Project. Colorado Department of Transportation, 1985.
- <sup>4</sup> Data provided by Louisiana Department of Transportation and Development.
- <sup>5</sup> Kristine Williams & J. Richards Forester, Land Development Regulations That Promote Access Management: A Synthesis of Highway Practice 15 (NCHRP Synthesis 233, 1996).
- <sup>6</sup> Julie Anna Cirillo, Federal Highway Administration. Safety Effectiveness Highway Design Features Vol. 1: Access Control 6 (1992).
- <sup>7</sup> Gluck, J., H.S. Levinson, and V. Stover. *NCHRP Report 420: Impacts of Access Management Techniques.* TRB, National Research Council, Washington, D.C., 1999.
- <sup>8</sup> Access Control Demonstration Project, supra note 3.
- <sup>9</sup> Access Management Manual, supra note 2.
- <sup>10</sup> Stover, V.G. and F.J. Koepke. Transportation and Land Development. Institute of Transportation Engineers, Washington, D.C. 1988.
- <sup>11</sup> Kristine Williams & J. Richards Forester, *supra* note 5.
- <sup>12</sup> Stover and Koepke, *supra* note 10.

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