LOUISIANA CIVIL ENGINEER

Journal of the Louisiana Section **http://www.lasce.org**

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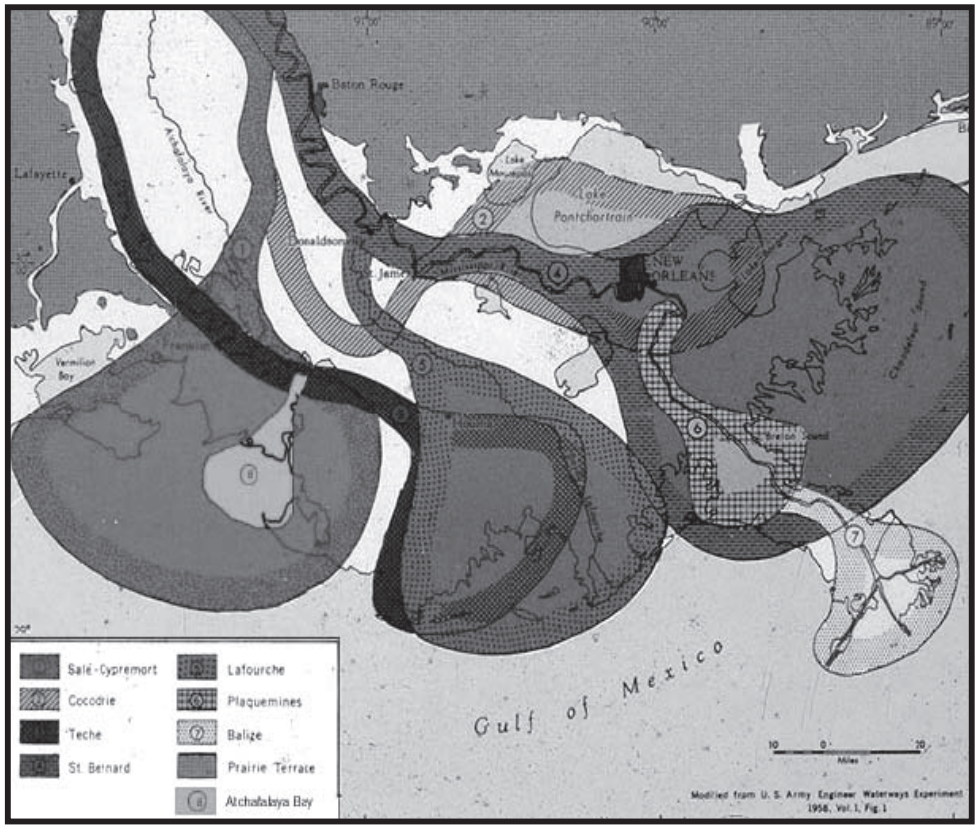

Evolution of the Mississippi River Delta

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LOUISIANA CIVIL ENGINEER

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

President's Message

By Ali M. Mustapha, PE

Ali M. Mustapha, PE

I hope all of the Civil Engineers around the world had a wonderful and successful year and that 2009 will be prosperous, flourishing, and safe year for our state, the country and the world. President Obama has promised to place infrastructure renewal on the forefront of our domestic issues and has committed to the adoption of a stimulus economic package to improve the nation's infrastructures. The American Society of Civil engineers (ASCE) and it's more than 146,000 members will play a very important role in deciding where the stimulus money will be spent to stimulate our struggling economy and improve our failing infrastructures. Civil Engineers should be proud of their profession and should engage in educating local governments (Municipal & Parish Governments), State government, and the public about the importance of our bridges, dams, roads, waterways, airports, schools, water & wastewater facilities, tunnels and other infrastructures that impacts our daily lives, the nation's safety and economic security.

I would like to encourage our members and all the Professional Engineers in the State to consider spending some time in 2009 on activities that will inform and educate the public and future generations about the importance and value of the engineering profession to our lives, safety and well being of human kind. All engineers, regardless of discipline, should consider volunteering to speak to environmental groups, civic groups, service organizations, elementary, middle and high school fairs, and university clubs in their areas to illustrate the value of our profession and how it impacts human lives. The 59th National Engineers Week will be celebrated this year February 15th-21st. This will be an excellent opportunity for our members and all engineers to volunteer their time by speaking at schools, assisting in the MATHCOUNTS, science fairs, future city programs, write articles in local newspapers, contact radio and television stations and participate in other media outreach programs. Also the Section members are encouraged to volunteer to serve on their local Branch Board or Section Board, chair or join a Branch or Section Committee. Let us make 2009 the year of giving back to our profession by working together!

Engineering firms, state professional and technical engineering societies (ASME, IEEE, ACEC, AICLE... etc.) are encouraged to initiate advertising campaigns during the National Engineer's Week to increase public awareness of the Engineering Profession, promote engineering, and showcase our noble profession. To become stronger it is essential for all engineers to work together and lead our profession.

Om Dixit, PE, Engineering Director with Fenstermaker and Past President of the Section, has launched an effort to form a Transportation and Development Institute, Louisiana Chapter (ASCE-TDI, LA). The Section Board approved the initiative at the October 24th Board Meeting and appointed Mr. Dixit as chairman of the committee. The purpose of the group is to foster the exchange of professional and technical knowledge and enhance structural engineering practice and the professional interaction between transportation engineers, traffic engineers, environmental professionals, transportation planners and related technical disciplines. I would like to thank Mr. Dixit for his efforts and leadership role in forming the ASCE-TDI, LA Chapter, chairing the committee and recruiting members for the Chapter. The Louisiana Chapter will be the third TDI organized in the Nation.

I am very honored to report that the Section's Journal, Louisiana Civil Engineer, has been awarded the 2008 National Outstanding Newsletter Award for large sections and branches by ASCE. Christopher P. Knotts, PE, President Elect, will be receiving the award on behalf of the Section at the Region 1, 2, 4 and 5 Leadership Conference on February 6th in Cherry Hill, N.J. The Journal's new Editor, Ms. Nedra Davis, has done an outstanding job preparing and publishing the November issue. She is committed to working with the Publication Committee on enhancing the Journal and implementing changes that will insure the Section will continue to publish an award winning Journal. I want to encourage our members to send articles, editorials, news…etc. for publication in the Journal.

On behalf of the Section Board, I would like to thank Todd Henry, PE, Shreveport Branch President and the Branch Offices and members for hosting and paying all of the expenses for the 2008 Section Awards and Officers Installation Luncheon at the University Club in Shreveport. We appreciate your hospitality, generosity, and being a great host. Once again, I would like to extend best wishes for a prosperous and successful 2009 for all our members and ASCE.

Past President's Forum - The Importance of Professional Organizations to Professionalism

By Charles L. Eustis, PE, Principal, GeoEngineers

Membership in a technical or professional organization, like the American Society of Civil Engineers (ASCE), is both an obligation and a privilege. Engineers' participation in the organization on the local, state, or national level enables professional contribution and development, which is, in short, professionalism. Involvement and a personal commitment to a professional organization also fulfill an obligation to contribute to civil engineering - one of America's most recognized and honored professions.

Commitment to ASCE programs allows personal, professional, and technical enhancement. Interaction with colleagues during ASCE programming develops confidence in one's communication skills and builds a personal connection to the professional, ethical, and social aspects of engineering. Attending ASCE conferences provides mechanisms for professional reinforcement and technical development while also giving the individual a chance to enjoy the company of peers in many pleasant and stimulating activities. Also important is taking the opportunity to share opinions on general issues or technical matters.

Moreover, participating in ASCE programs helps engineers meet and interact with other engineers who are colleagues, clients, prospective employees, or even future employers. This enables business opportunities. Interaction with these fellow engineers also gives an opportunity to strengthen comradeship. Ultimately, career growth and professionalism are achieved through participation.

Members of ASCE give back to the profession through supporting programs devoted to the advancement of professional ideals and concepts. Participating in professional organizations like ASCE provides and stimulates engineering leadership in serving the public welfare. ASCE has a powerful voice that speaks for civil engineering professionals. ASCE also supports efforts to maintain and improve the quality of professional services and constructed projects.

Although not all professional organization members are active, their passive support is needed and welcomed. Professional organizations provide an avenue through which all members can, and should choose to, voice their opinions on issues under discussion or programs undertaken. The professional organization also fosters new ideas and technical developments. For instance, many ASCE technical standard and guideline publications are used throughout the nation and the world.

So, can engineers claim their own professionalism without belonging to a professional organization like ASCE? Yes, but they will miss the opportunities to enhance their technical and personal development, enable business opportunities, give back to their chosen profession, and voice their opinions on issues that affect engineering and the public it serves.

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Let Us Try to Save the Vanishing Mississippi River Delta

By Sultan Alam, Hydraulic Engineering Consultant

Sultan Alam

Sultan Alam, an expert in the field of hydraulic engineering proposes changes in standards from exclusive use of numerical modeling to the use of large scale hydraulic models coupled with numerical modeling. After a lifetime of achievement in hydraulic engineering, he is consulting with the State of Louisiana on their current Studies related to the Mississippi River Delta restoration. Support from State and Federal authorities is crucial to save the vanishing Mississippi River Delta. There are specific targets and needs around design and implementation. The review of historical background is needed to set the stage for understanding the problem. How the Mississippi River Delta formed and evolved will shed light on how this situation can be reversed utilizing hydraulic modeling. The need for a more comprehensive tool using state-of-the-art hydraulic scale models becomes self-evident. Reliable design, verification of necessary structures, and their optimum layouts are necessary to provide future delta restoration.

Historical Background and Introduction

My first contact with the Lower Mississippi River was in June, 1980 when I was tasked by SOGREAH, a consulting engineering company based in Grenoble, France to go to Louisiana and enquire about the hydro power generation potential of an existing flow diversion structure diverting a precise percentage of the Mississippi River discharge into the Atchafalaya River before flowing to the Gulf of Mexico.

Mayor Sidney A. Murray Jr., of the small town of Vidalia often observed the large turbulent flow diversion at the US Army Corps of Engineers' (USACE) Low Sill Structure and thought that there must be some way to convert this turbulent water diversion structure into a useful power generation structure. He along with his friend Brad Lancaster, the Director of the Baton Rouge based consulting engineering firm Forte & Tablada, Inc. inquired about this with almost all of the renowned Hydro Engineering Firms of the US including the USACE to evaluate the hydro potential of this flow diversion structure and see if it was a feasible hydropower generation site. The general conclusion was that it could produce about 600 GWh annually and the investment cost would not justify such an undertaking. As a last resort, Mayor Murray contacted SOGREAH who had recently retrofitted a prefabricated hydropower station on the Ohio River Lock and Dam Structure Greenup. The initial SOGREAH engineering site visit team also concluded that the site was probably not good enough to produce enough energy to justify the investment.

My assignment was therefore to review the general hydraulic conditions around this flow diversion structure, and in particular, assess the hydraulic performance of the Low Sill Structure and at the same time try to estimate the reliable long-term annual energy output of a hydro plant built at this location. Brad Lancaster introduced me to USACE engineers at the Waterways Experiment Station in Vicksburg, MS and the New Orleans District. I spent several days going over and discussing with USACE personnel the available long-term hydrological data regarding the Mississippi River Stage Discharge ratings at the Old River Control Complex (ORC).

It became evident that the available head discharge relation attributed to the Low Sill Structure by almost all my predecessors were based on apparent water level values in the Mississippi River, the water level downstream of the Low Sill Structure and the estimated discharge based on the gate openings.

This procedure had several major sources of errors, which impacted the long-term energy output estimates:

1. The instantaneous head differentials did not represent a steady state condition, because after a change in the gate opening it takes considerable time for the water level to stabilize to its correct level.

2. The gates of the Low Sill Structures were not calibrated on a hydraulic model and thus it was not possible to estimate accurately the gate discharges for the kind of gate operation it was being subjected to.

3. The tail-water level of the Low Sill Structure was not always proportional to the discharge through the structure but also was influenced by the percentage of the discharge that was coming from the Red River.

So the procedure used by the various engineering firms and the USACE in their assessment of the long-term average annual energy output at the Old River Control Complex was not representative of the actual conditions and penalized the project's energy production potentials.

The procedure I utilized consisted of starting with the Simmesport Gauging station because it provided a precise stage discharge relation. Then the corresponding Low Sill Structure tail-water level was determined by backwater computation with necessary corrections for the Red River discharge and the loop effect of the rising and the falling river discharge hydrographs. This procedure allowed me to obtain the energy output computations at a minimum long-term annual energy production of 750 GWh. This was an average increase of 25% more energy than the initial estimates which made the project feasible. The project has been producing significantly more energy than my estimate of 750

GWh since the USACE increased its water allocation. In 1993 and 1994 due to the exceptionally long high flow duration because of flooding in the upper Missouri River, the energy output exceeded 1200 GWh.

The disparity in numbers underline the fact that very conservative hydraulic designs, related long-term energy computations and conclusions might have eliminated the construction of this very interesting 200 MW low head run-of-river hydropower project and may have deprived Louisiana from this clean renewable source of energy. Thanks to the perseverance of late Mayor Sidney A Murray Jr., the project is now in operation since 1991 and is an international showpiece in the field of low head prefabricated large hydropower stations.

Figure 1- General view of the Sidney A. Murray Jr. Hydroelectric Station. The Island (ref: 1) at the entrance of the intake channel plays an important role by establishing uniform flow distribution downstream, which was essential for obtaining high plant efficiency. This channel compared to the Corps Low Sill or Auxiliary intake channel has no bank scour or sand deposition problems.

During the hydraulic design studies of the Sidney A Murray Hydroelectric Station it became evident that the modeling technique used by Waterways Experiment Station (WES) in Vicksburg was significantly different than that used by the SOGREAH Hydraulic Laboratories in France.

This was especially apparent in reproducing the Mississippi River sand transport in the project area. According to the WES movable bed hydraulic model, with a horizontal scale of 1/240 and vertical scale of 1/100 using coal dust as movable bed material, the proposed hydro intake channel will not transport any sand from the Mississippi river to the Old River Control Complex (ORC) Outflow Channel. So the hydro project owner would have to compensate the sand transport deficit by dredging from the Mississippi River in the Project area to the Outflow Channel. At the same time the 1/100 scale movable bed hydraulic model built at SOGREAH in Grenoble, using treated saw dust as sediment material, indicated that the hydro intake channel will carry the same concentration of sand as in the Mississippi River during the high river discharges.

Figure 2 – Sediment sampling installation by pumping a mixture of sediment and water from a highly turbulent flow area of the Auxiliary structure at the Old River Control Complex (ref: 2).

As this was a major point of contention between the USACE and the Hydro Project Owners, the Project Owners decided that continuous sediment samples will be collected at the two USACE flow diversion structures and the hydro station. Using a calibrated optical sediment sampler for one year continuously recording of sediment concentration measurement was carried out at all the above-mentioned structures by pumping water and sediment mixtures with 27 different pumps (Figure 2). The USGS eventually controlled the performance of these sediment sampling installations and considered them as “installations advancing the state-of-the-art”.

For practical and maintenance reasons since 1993 continuous recording was discontinued and two hand samples are collected daily from all of the pumps. Thus these sampling stations now have 15 years of daily sediment data, perhaps the best sediment data collected anywhere in the world. The data collected over the years confirm that the Hydro intake channel was indeed passing the same kind of sand concentration as transported by the Mississippi River as predicted by the SOGREAH 1/100 scale movable bed hydraulic scale model. However, due to the particular Auxiliary Structure operational mode (storage during the high flows and flushing during the low flows) the efficiencies of the Hydro channel and the Auxiliary channel are thus not directly comparable. However, contrary to the WES model findings the Auxiliary structure is not passing 48% of the total Mississippi River sand load as can be seen in Table I. To satisfy

the requirements of the USACE the Owners of the Hydro Station invested $200,000 for the sediment sampling installations. However, this is much less than the amount they would have to spend if they were to dredge millions of tons of sand that the USACE thought the hydro project was not passing through the Hydro intake channel.

Figure - 3 shows the daily variations of the total sediment concentrations and the sand concentrations passing through the power plant (PPS) structures at ORC. It is evident that the sediment transport rates are very sensitive to the river water surface slope and transports most of the sediment during the rising flood hydrograph.

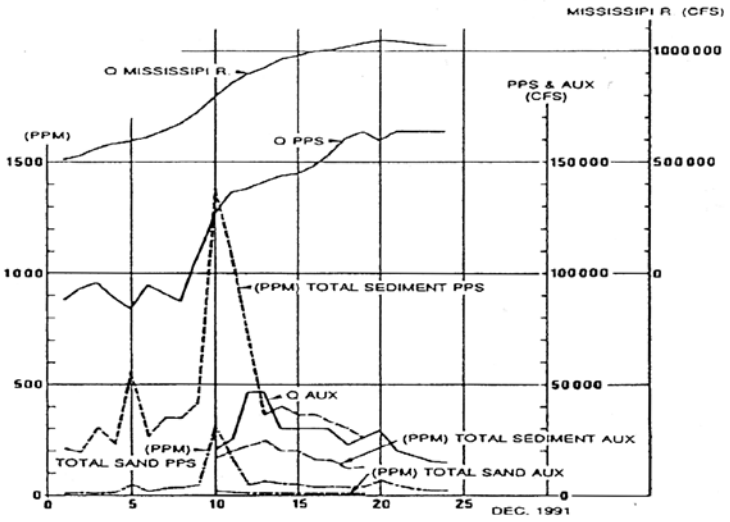

Figure 3 – Variation of the sediment concentration as a function of the Mississippi River discharge hydrograph and the corresponding flow through the prefabricated power plant (PPS) (ref: 2).

Table I show 10 years (1998 - 2007) total fine sediment load (< 0.062 mm) and the corresponding sand transport through all three structures at the ORC.

Year and location	Total sand in tons	Total fines in tons	Av. annual discharge in cfs
1998			
Hydro	4,701,084	36,002,485	123,000
Auxiliary	2,404487	9,562,344	33,000
Low Sill	820,720	4,730583	23,000
ORC	7,926,291	50,295412	179,000
1999			
Hydro	2,559,418	24,786,329	103,000
Auxiliary	2,788,078	7,432,889	33,000
Low Sill	459,689	4,695,964	15,000
ORC	5,807,185	36,915,182	151,000
2000			
Hydro	1,917,777	14,924,801	77,000
Auxiliary	888,669	4,099975	20,000
Low Sill	109,432	684,442	4,000
ORC	2,915,869	19,709,218	101,000
2001			
Hydro	4,534,514	27,573,529	93,000
Auxiliary	1,279,446	4,840,842	18,000
Low Sill	2,462	42,928	300
ORC	5,816,422	32,457,299	111,300
2002			
Hydro	2,283,327	16,620,770	106,000
Auxiliary	3,675,179	6,059,079	34,000
Low Sill	370,552	1,729,022	11,000
ORC	6,329,058	24,408,871	151,000
2003			
Hydro	3,504,310	16,466,984	114,000
Auxiliary	5,382,621	7,123,253	39,000
Low Sill	632,177	1,426,365	11,000
ORC	9,510,108	25,016,602	164,000
2004			
Hydro	2,201,004	21,426,292	128,000
Auxiliary	3,569,524	8,626,399	38,000
Low Sill	23,061	377,109	2,000
ORC	5,793,589	30,429,740	168,000
2005			
Hydro	2,598,267	14,594,607	100,000
Auxiliary	4,848,294	4,992,266	37,000
Low Sill	375,129	873,923	8,000
ORC	7,821,690	20,460,796	145,000
2006			
Hydro	1,569,237	13,095,074	91,000
Auxiliary	434,397	3,246,377	25,000
Low Sill	89,947	319,654	1,000
ORC	2,093,581	16,661,105	117,000
2007			
Hydro	2,219,495	17,836,838	101,000
Auxiliary	2,504,470	6,326,863	27,000
Low Sill	181,475	541,014	3,000
	4,905,440	24,704,715	131,000
10 year Av. 1998-2007	**Total sand in tons**	**Total fines in tons**	**Av. annual discharge in cfs**
Hydro	2,808,843	20,332,765	104,000
Auxiliary	2,777,517	6,231,029	30,000
Low Sill	310,004	1,542,100	8,000
ORC	5,896,364	28,105,894	142,000

The above table confirms that on the average over the 10 year period the total sand load is about 17% of the total sediment load diverted through the ORC structures. Considering that on average about 20% of the Mississippi River discharge is diverted into the Atchafalaya River the total sediment load transported by the

Mississippi River just upstream of the ORC structures is about 170 million tons of which, the sand load is about 29 million tons.

The total annual sediment load that is reaching the Mississippi River downstream of ORC is therefore approximately 140 million tons of which, the sand load is only about 23 million tons. So when we talk about Mississippi River delta restoration we have to think in terms of the total sediment material available and the best way to get the sediment where it is needed most.

Formation and Evolution of the Delta

How the Mississippi River Delta Formed and Evolved? (ref: 9)

Between 60,000 – 30,000 ybp (years before present) the sea level lowered by 450 ft due to the formation of glaciers

Between 30,000 – 6,000 ybp sea levels slowly began to rise.

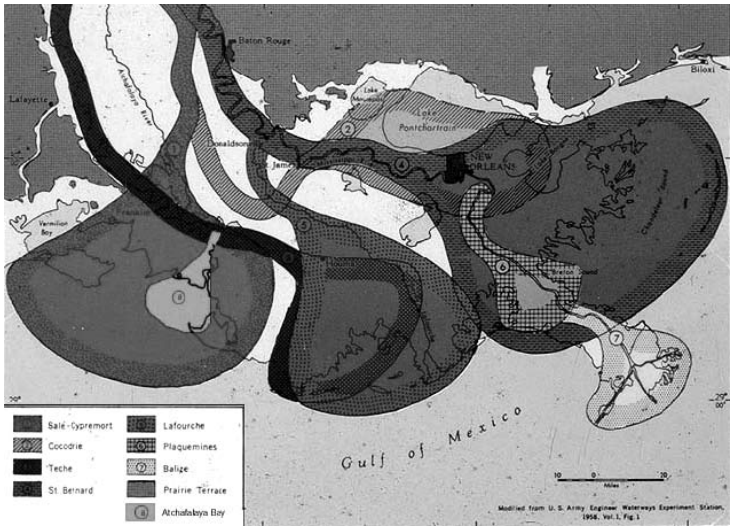

Figure 4 – Evolution of the Mississippi River delta between 3,000 years before present to present. (ref: 9)

Figure 4 shows the evolution of the Mississippi River delta over the last 3,000 years. The main geological evolutions to date have been identified as follows:

Salé-Cypremort Delta - Between 3,000 -2,250 ybp.
Cocodrie Delta - Between 2,250 - 1,750 ybp.
Teche Delta - Between 1,750 - 1,250 ybp
St. Bernard Delta – Between 1,300 – 750 ybp
Lafourche Delta – Between 750- 350 ybp
Plaquemine Delta – Between 600 – 250 ybp
Belize Delta – since 250 ybp to present
Atchafalaya Delta – recent (sub aerial since 1973).

In trying to predict future delta restoration potential and possibilities the two periods of importance are items 7& 8, the Belize Delta and the Atchafalaya Delta, respectively.

The Belize Delta contains the present mouth of the Mississippi River. It extends to the edge of the continental shelf and has three openings directly into the Gulf of Mexico: Southwest Pass (where all current shipping occurs), South Pass (oil and gas transportations and charter fishing), and Pass a Loutre (some barges, but mostly crew boat and fishermen).

The Atchafalaya Delta has started forming since late 20th century (Figure 5); the northern portion of the Grand Lake began to fill. Sediments continued to be deposited throughout the lakes until they were virtually silted in with a few channels by late 1970s. Once the lakes were filled, sediment flowed through to the coast and began to form deltas. The first sub aerial deltas appeared after the floods of 1973. There are now many well developed deltaic islands formed (about 22,000 acres by 1975, with a projected 192,000 by 2020).

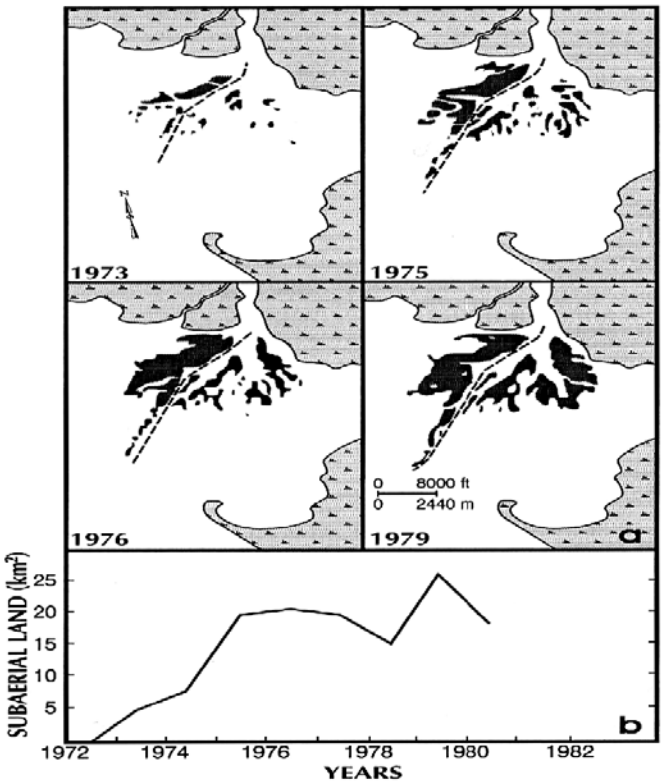

Figure 5 – The recent evolution of the Atchafalaya delta, which emerged over only a few short years during the 1970s. (ref: 11)

As the total amount of sediment transported by the Mississippi River has been decreasing rapidly over the years, the future delta potential for restoration is also limited. However, building of the levee flood protection system has at the same time prevented all possibilities of nourishment of the entire deltaic region of the Lower Mississippi River with fresh sediment. So if the total sediment loads now available were diverted to the decaying marshlands by adequately designed sediment diversion structures it is possible that during the next 250 years more land might be created than the area corresponding to the Belize Delta in Figure 4. Because during this period most of the fine sand or sediment load transported by the Mississippi River was not participating in creating land but was getting lost in the Gulf of Mexico. So even if there is much less sediment now in the river than over the last 250 years, the coastal area restored in the future might still be significantly more than the area corresponding to the actual Belize Delta. It is worthwhile to save this vanishing Mississippi River

Delta, and it is my sincere belief that this situation can be reversed.

To achieve this a completely new approach to the delta management practice must be adopted. We need major large-scale sediment diversion structures, abandoning the existing navigation route through the Southwest Pass and creating a separate slack-water navigation channel using multiple navigation locks.

Over the years (since 1980) of my contact with Louisiana, reading local news paper articles, publications and assisting in conferences about massive delta land losses I often wondered why the decision makers, i.e., primarily the USACE has not carried out major design studies of the kind of structures, which could mitigate the two major problems Louisiana is facing? Time has passed and we are getting into an inextricable situation where the balancing act between maintaining navigation by more and more dredging and protecting land against flooding by building bigger and longer levees do not tally any more. The residual energy gradient of the river below the Head of Passes is too small to transport even fine sands and the annual rate of sediment deposition is such that the dredging costs to maintain the navigation channels is currently about $100,000,000 per year.

Simulating the sea level rise on the small-scale physical model of the Lower Mississippi River Delta indicated that compared to present condition, the sediment deposition zone would tend to migrate further up stream and the total dredging volume would therefore increase. So it seems that the existing Mississippi River navigation channel to the Gulf of Mexico has almost reached its limiting condition. Its maintenance by dredging alone is no longer a strategically viable solution.

I have been involved in my relatively small way worrying about Louisiana in trying to understand the reasons for such total absence of any major remedial measures or planning over the last 28 years on behalf of the USACE that could change the situation. A thought came to my mind (I might be wrong) that the reason could most probably lie in the traumatic experience of the USACE with the Low Sill Structure! This structure, because of inherent design flaws, performed badly. The structure was badly damaged and undermined, and was almost lost during the 1973 flood. This experience might have inhibited the Corps from undertaking bold new approaches to mitigate the Mississippi River delta degradation problem. The design and operation of the Auxiliary structure also confirms some inadequacies such as: meandering channel inside the channel which is causing severe bank erosions and sand depositions creating a permanent loss of channel cross section inside this channel. In spite of the extremely conservative design and over cautious operating practices, the channel is much less efficient than it could be.

During the design and construction of the Sidney A Murray Hydro Station we also noticed the USACE had an extra cautious attitude when it came to creating an opening in the existing levee for the power intake channel or a foundation design for the power plant different than that of their design practices.

Since then the USACE has built two very small water diversion projects Caernarvon and Davis Pond and a sediment diversion project at West Bay. The rational behind building all of these projects is not very clear because they are in no way mitigating the acute coastal land loss problems or the volume of extensive maintenance dredging to assure safe navigation.

I think building efficient large water and sediment diversion structures would go hand in hand with the balanced delta restoration and sediment free navigation channel with minimum or no dredging.

I have often told some of my Louisiana Engineer friends that with all the hydraulic problems in Louisiana, they badly need to develop the culture and use of large scale hydraulic modeling in designing the required hydraulic structures. Louisiana would require large hydraulic structures to solve the current delta degradation and annex navigation problems. Unless these structures are properly designed using state-of-the-art hydraulic modeling, Louisiana might end up spending large sums of money in designing and constructing these structures without any good end results. Relying exclusively on numerical models, especially for the kind of projects Louisiana needs, would certainly not be good hydraulic engineering design practice.

Need for Adequate Hydraulic Modeling

The Mississippi River is a large and strategically vital waterway draining 44% of the USA. So as Mr. Randy Hanchey, the past Assistant Secretary of the Department of Natural Resources of Louisiana once told me that you couldn't tinker with the Mississippi River without knowing exactly the consequences of any major hydraulic structure you would want to build. The water and sediment diversion structures designed by using numerical models apparently are not completely satisfactory. To build major sediment diversion structures in the future we would require tools that would reproduce in a more comprehensive manner the overall environment and the impacts of these structures.

Thus Mr. Hanchey accepted the idea of funding a very small-scale physical hydraulic model (SSPM) for the Lower Mississippi River and delta reproducing about 9,027 km2 about 3,526 square miles and 96 km or 60 miles of the Mississippi River above the Head of Passes. (The total cost of construction including verification tests in France was $101,000, dismantling, transport by air from France to USA and reassembly at Louisiana State University was approximately $50,000.) The purpose of building this model was to study the concept and locations of efficient large-scale water and sediment diversion projects along the Mississippi River as a very preliminary step towards designing and constructing such structures. One of the most interesting features of this model is its capacity to reproduce the Mississippi River sand transport with a sedimentation time scale of ½ an hour equal to one year's prototype time. So for the given sediment diversion structure the model would show 100 years of prototype delta building capacity in 50 hours. Although qualitative in sediment transport simulation, such a model can reproduce fairly accurately the comparative performances between various project sites including the comprehensive hydraulic environment affecting the overall performance of the proposed structure and thus may be considered as an extremely interesting tool.

Testing related to the annual sediment deposition and the dredged volume for the small-scale model gave relatively comparable figures of both volume and area of dredging. This may be considered a good verification for reproduction of the prototype sediment transport and deposition patterns on the model.

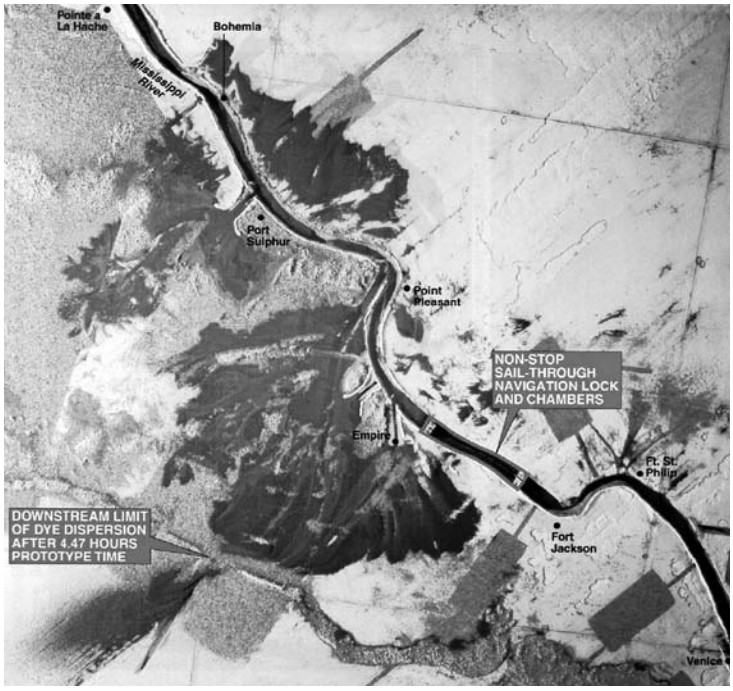

Figure 6 – Sediment deposition patterns over the Mississippi River deltaic area of Plaquemine Parish with a large diversion discharge (ref: 5).

This model may be used for optimum site selection for the sediment diversion structures and the testing may start as soon as necessary go ahead is obtained. Figure 6 shows the typical sediment deposition patterns reproduced on the SSPM over the Mississippi River deltaic areas.

It is worth mentioning here that the USACE West Bay sediment diversion project was reproduced on the small-scale physical model (Figure 7) and shows clearly that that the location and the size of the West Bay diversion would not allow it to divert much sand from the Mississippi River. On the model it was evident that the discharge through the Main Pass diverted sand in movement away from the entrance of West Bay. Also, the Mississippi River discharge flowing through Grand Pass was probably creating higher tail water effects thus reducing the total discharge entering West Bay.

It would be interesting to know by prototype survey the amount of sand that has passed through the diversion since its inception about 4 years ago and also the maximum water discharge passing through the West Bay entrance compared to the design discharge. This information would allow us to verify the observations on the SSPM and eventually confirm the degree of its accuracy.

In this regard, a recent newspaper article baffled me and I think the journalists are also to blame for becoming the resonance case for all sorts of gossip influencing public opinion. I have noticed that often these journalists do not have the slightest technical understanding of what they are writing about and distributing, probably in good faith, lots of wrong information and conclusions creating confusion and negative impacts we don't need.

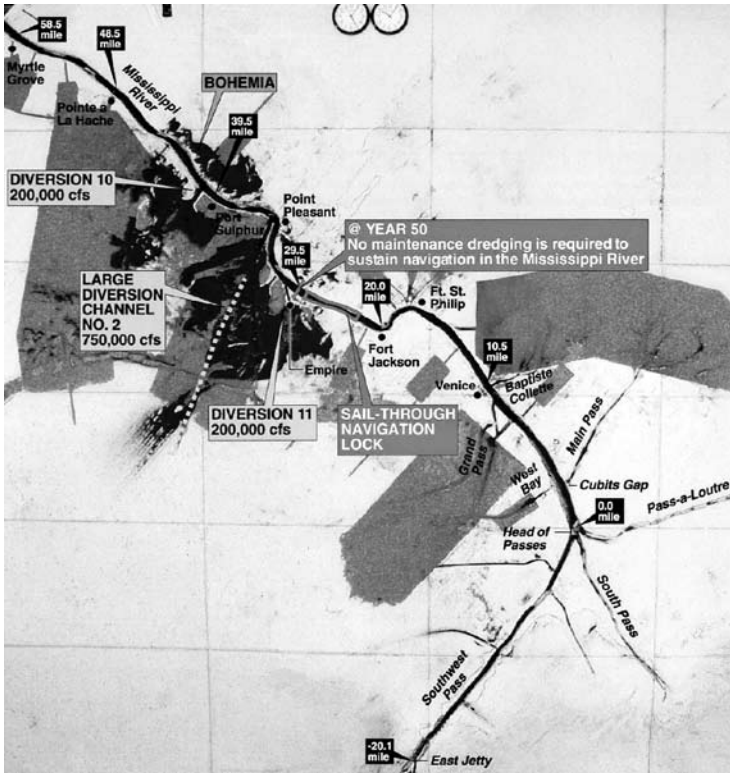

Figure 7 – Compared to the large-scale diversion for 50 years at Channel 2 we can see that the very small amount of sand diverted at West Bay diversion channel over the same period would not build much delta land in the long run (ref: 5).

Need for State-Of-The-Art Hydraulic Scale Models.

To design and construct major hydraulic structures in the Mississippi River Delta we need the tools in which we can trust. We need state-of-the-art hydraulic scale modeling.

As mentioned earlier during the design studies of the Sidney A. Murray Jr., Hydroelectric project the 1/100th scale movable bed hydraulic model provided reliable design information which, have since been successfully verified in prototypes such as: The sediment diversion characteristics from the Mississippi River to the power intake channel.

The flow induced tailrace channel erosion from EL –15ft to –55ft resulting in removal of about 7,000,000 million cubic yards of tailrace channel bed material mostly composed of sand, silt and intermittent clay sills. The savings in dredging costs alone was much more than the total cost of the model studies in France ($750,000).

For the development of a delta rehabilitation project we can use with a confidence similar 1/100 scale physical hydraulic model,

which would enable reliable design and verification of the necessary structures and their optimum layouts.

In the past I had the privilege of participating in some of the major hydraulic projects around the world and some of them required significant hydraulic modeling. For the 14,000 MW $30 billion Itaipu Hydroelectric project in Brazil. The complete hydraulic model studies lasted about 7 years. For the 200 MW $600 million Sidney A. Murray Hydro Station and its Intake and Tailrace Channel studies, the total time was one year. Currently I am advising the owners of a very large low head 3,300 MW, $5 billion runoff hydro project on the Madeira River, a tributary of the Amazon River in Brazil, for its hydraulic design and model studies related to its sediment management. The river transports 500 million tons of sediment annually: 85% silt and clay and 14% medium to fine sand and 1% coarse sand. The 1/100 scale hydraulic model for this project is under construction at the University of Sao Paulo. The model study will last about two years.

The Mississippi River delta rehabilitation studies would require a fairly large hydraulic laboratory. Apart from the construction of the laboratory the complete hydraulic design studies might require 2 to 3 years. Of course, apart from covering very large surface areas, these models would consist of verifying the efficiency of sediment diversion through a fairly large number of automatic radial gate structures totalling a combined length of several miles. One of the requirements would be to spread the diverted sediment and the water as thinly and uniformly as possible over the deltaic marshlands. High flow concentrations and resulting high flow velocities would create severe land erosion, contrary to our objective. Four parallel Navigation Locks (2 up bound and 2 down bound) would also require special design studies for the hydraulic model. Finally the lock approach, entrance and exit conditions of very large ocean going vessels, special testing facilities like the one run by SOGREAH in France where Mississippi River pilots go for training, may eventually be required.

The design dimensions of the slack water Navigation Channel would be based on the existing Southwest Pass channel dimensions. This large straight slack water navigation channel about 25 to 30 miles long would connect the Mississippi River Locks downstream of Fort St. Phillip to the deep waters of the Gulf of Mexico near Pass a Loutre.

The study of the existing Bird Foot delta below Fort St. Phillip would be useful to understand its evolution after it is abandoned and the part of the sediment load that would escape the diversion structures would gradually be deposited in the abandoned Mississippi channel bed, plug the channel and force the water and sediments to go over the banks in this area.

Some of the hydraulic structures are fairly simple and some of them may be partially prefabricated, for example: The gates and gate sills may be transported by road or river

The navigation locks may be built in a ship yard and floated onto the site near Fort St. Philippe.

The Proposed Mississippi River Delta and Navigation Rehabilitation Project

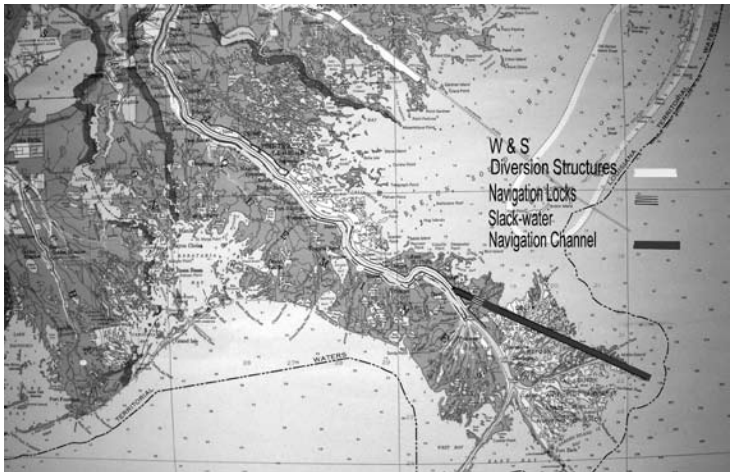

Figure 8 – Schematic representation of the general layout of the probable water and sediment diversion structures, the navigation locks and the slack-water navigation channel

Figure 8 shows the schematic arrangement of what may be considered as the basic requirement of the proposed delta rehabilitation project. It will have the following three main components:

1. A series of efficient sediment diversion structures would have to be developed along the river capable of diverting almost all of the sand of the Lower Mississippi River transported in suspension during the annual high flows. In designing the sediment diversion structures it is important to understand the actual annual sand transport patterns of the Lower Mississippi River, which takes place only over a total period of about one and a half to two months per year. As shown in Figure 3 the suspension of the total sediment load and sand is very sensitive to the energy gradient and this is the reason why most of the sediment is transported during the rising flood hydrograph. For this reason the total water discharge capacity of the gates would have to be almost equal to or a little more than the representative flood discharge of approximately 1,100,000 cfs (to be verified during the design studies). To optimize the sediment diversion conditions, i.e., successfully divert as much river sediment as possible and trap the fines in the marshlands. For this the sequence and total time of opening of each set of gates would have to be tested on the small-scale physical model first and once a satisfactory procedure has been established, testing would be repeated on the 1/100 scale partial models representing a set of large number of gates. The final total length of the gated structures may be estimated at about 40,000 to 50,000 ft, i.e., the maximum water discharge per ft length of the gate would be about 20 to 25 cfs or 0.56 to 0.70 m3/s. The flow velocities at the exit of the gated structures (assuming about 10 ft depth) would be about 2.0 to 2.5 ft/s. (0.60 to 0.76 m/s). Away from the structure the flow velocities would decrease and would be probably 0.5 ft/s. Layout of the structures would be based on where it would be possible to divert the optimum quantities of sand. The fines are always proportional to the water discharge. Site selection would also look for minimal impacts on housing or industrial installations and adjacent marshlands suitable for trapping the fines.

2. A set of four Navigation Locks guaranteeing safe and rapid transfer of all inbound and outbound ships to and from the Mississippi River to the slack water navigation channel and vice versa would be designed based on the characteristics of the vessels and frequencies of their transit. At present the width of the navigation channel at the Southwest Pass is about 3,000 ft so this width would be sufficient to accommodate 4 locks 165 ft (50m) with a distance of 780 ft (238 m) between the locks. Considering the very small head differential between the water levels of the Mississippi River near Fort St. Phillip and the Gulf of Mexico near the outlet of Pass a Loutre, (approximately only 2-3 ft) the lock filling and emptying times should not be more than a few minutes. As one of the locks would be almost always ready to receive the entering vessel the total locking time should not be more than 10 minutes. This lost time in my opinion would be largely compensated by the reduction in the total navigation distance and the time required to navigate between Fort St. Phillip and the exit point of Southwest Pass. These Navigation Locks would also create a discontinuity between the Mississippi River and the slack water navigation channel, which would prevent any massive intrusion of sand into this channel. It may therefore be assumed that once the project is implemented there would be no or very little need for maintenance dredging of the slack water navigation channel.

3. The proposed slack water navigation channel between the Navigation Locks and the Gulf of Mexico would have a total length of about 25 to 30 miles. Thus compared to the existing distance route via the Southwest Pass there would be a reduction of about 10 miles. As mentioned earlier this would largely compensate the time lost in passing through the Navigation Lock. The navigation channel would have a total width comparable to the existing channel in the Southwest Pass of about 3,000 ft and, if required could be wider. The channel banks constructed with the excavated material would be above the gulf water level so that in case of hurricane surges there would be no over topping of the banks; however, this may not be possible given Louisiana's large storm surges. As the channel will exit in to a deepwater zone of the Gulf of Mexico and as there will be no sediment transport, maintenance of the channel exit structure would be easier then at present at Southwest Pass.

Conclusion

There is now adequate technology available to design and construct structures, which would help to reverse the situation and rebuild the vanishing Mississippi River Delta. All that is required is a firm commitment on behalf of the decision- making authorities and then to follow a well defined master plan. Initially it might consist of the following items:

1) Fix specific targets
2) Create a design team to come up with
   -Site selections for the water and sediment diversion structures
   -Carryout designs of the water and sediment diversion structures
   -Carryout design of the navigation locks
   -Carryout design of the slack-water navigation channel
   -Simultaneously make necessary preparation for the hydraulic model testing facilities
   -Verify by hydraulic model tests the feasibility of the structural designs and if required carryout necessary modifications.
   -Carry out the detailed civil engineering design of the various structures
   -Advertise for construction bids

I sincerely hope that a decision to save the vanishing Mississippi River Delta by designing and constructing adequate water and sediment diversion structures, and navigation facilities will be taken by the State and Federal Authorities and a new chapter in the history of this famous river will be written.

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Sultan Alam *born in India, educated in India and France, worked almost 45 years in the fields of hydraulic engineering, before retiring as Chief Hydraulic Engineer from SOGREAH in 1993. He now works as consultant to various engineering firms in the USA, Canada, Europe, Brazil and India, has served on expert panels for the World Bank, the Asian Development Bank and State Agencies. His experience includes hydro, river engineering, reservoir sedimentation management and coastal restoration projects in many countries around the world. He is currently directing the hydraulic design and sediment management studies for the 3,300 MW JIRAU run-of-river hydro project on the Madeira River a tributary of the Amazon, annual sediment load 500 million metric tons, maximum flood discharge 84,000 m3/s (2,965,200 cfs). He is also working with the State of Louisiana on their current studies related to the Mississippi River Delta restoration.*

Small-Scale Physical Model

By Clinton S. Willson, PhD, PE, Associate Professor, Department of Civil & Environmental Engineering, Louisiana State University

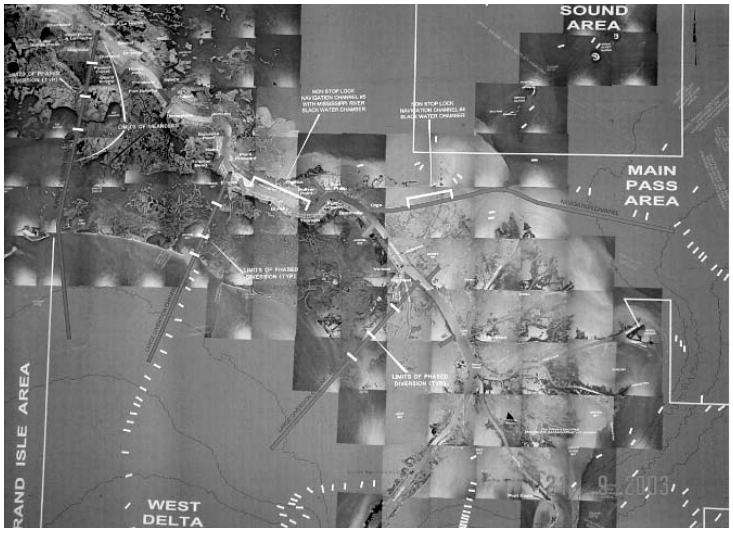
Success in accuracy with small scale physical models determines the need for larger physical models for the future in dimensioning of diversion channels. Leading in water and sediment diversion project design studies are the faculty and students in the Department of Civil and Environmental Engineering. They have been have been using a small-scale physical model (SSPM) of the lower Mississippi River to assist the state in the coastal restoration effort. During the summer of 2003, Sogreah Consultants in Grenoble, France constructed the SSPM. After calibration and testing, the model was disassembled and shipped to LSU in October of 2003 and is housed in the Vincent A. Forte River and Coastal Engineering Laboratory located on River Road at the western edge of the LSU campus. The model is being employed to investigate the use of large-scale diversions to divert flow and sediments from the Mississippi River and to better understand how a majority of these sediments currently being lost off the continental shelf can be retained. The two main objectives of the testing program are to: (1) determine the feasibility of building new lands and coastal marshes by the use of planned large-scale flow and sediment diversions from the Mississippi River in the model area; and (2) identify those diversion arrangements that show the best results for further detailed studies.

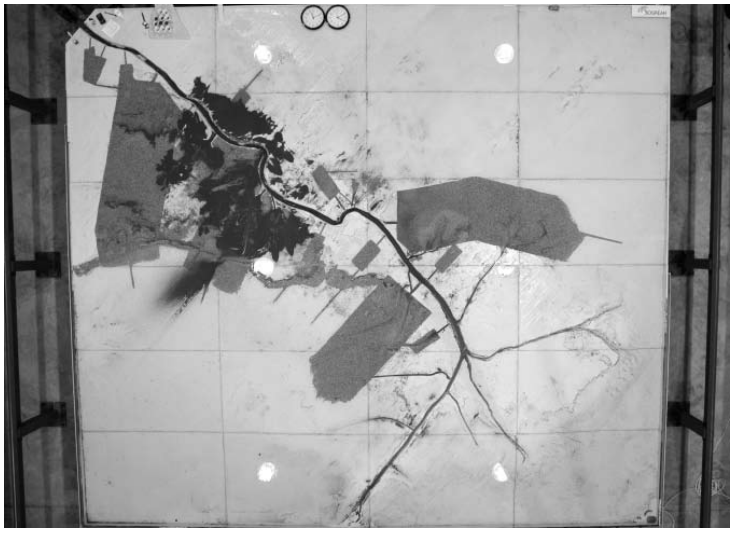
The SSPM reproduces the Mississippi River and all of its distributaries from Phoenix-Myrtle Grove to the Gulf of Mexico, a prototype area of about 9,027 km2, on a platform of 62.69 m2 (see Figures below; the left figure shows a map of the area while the right figure shows an overhead photo of the physical model). This corresponds to the lower 76 miles of the river. The SSPM is a distorted scale model (i.e., 1:500 vertical, 1:12,000 horizontal) designed to reproduce general sediment transport trends, rather than local velocity variations. The model scaling follows Froude number similarity for hydraulics and the Shields relationship for inception of sediment transport. Based on the sedimentation time scale ratio, one year's evolution in the field is reproduced in 30 minutes of model run time. This allows for the reproduction and comparison of the land and marsh building capabilities of the various conceptual diversions to be tested very quickly; e.g., 100 years evolution in 50 hours. In addition, overflow weirs are used to simulate a three-foot relative sea level rise tat accounts for projected land subsidence and increases in eustatic sea level.

Extensive calibration and validation tests have shown that: the model is capable of accurately producing river water surface profiles for flows ranging from 400,000 to 1,250,000 cubic feet per second (cfs); the transport of coarse sediments (i.e., sands) occurs over the entire section of the river bed; incipient motion of the sediment occurs at 400,000 cfs; movement of the sand along the river bed and formation of sand bars for flows around 500,000 cfs; and the flattening of the sand bars and the suspension of the coarse sediments over the entire depth of the river for flows exceeding 700,000 cfs. In addition, testing results have shown that the model is able to reproduce fairly accurately fresh water dispersal patterns and their velocity distribution in the vicinity of the various diversion channels.

A large number of scenarios have been tested—results have been published in technical reports, conferences and workshops. Future water and sediment diversion project design studies will require larger physical models. These will allow for adequate dimensioning of the diversion channels, the need for control structures at the diversion channels, and the feasibility of non-stop navigation locks. In addition, the physical model results have provided valuable insights and a framework for detailed numerical modeling studies.

For more information on this project or to arrange for a visit to the model, contact Clinton S. Willson at cwillson@lsu.edu or (225) 578-8672.





Pervious Concrete Pavements for Parking Lots and Low Volume Roads

By Aziz Saber, PhD, PE, Larson Professor and Chair of Civil Engineering, LA Tech University

Aziz Saber, PhD, PE

ABSTRACT. An overview of Pervious Concrete is presented with a focus on the engineering properties, the construction methods, inspection, and maintenance of pervious concrete as compared to traditional concrete. The advantages of pervious concrete are highlighted, and applications on the use of pervious concrete for parking surfaces and low volume roads are discussed.

Background. Pervious Concrete, also known as Porous Concrete, is an open cell structure that allows water to pass through. It was first used in 1852 in residential walls in Europe when sand and other fine aggregates were not readily available. Currently the primary use is for pavement, parking areas, sidewalks and pathways. Also, it is used for tennis courts, patios, residential roads, alleys and driveways.

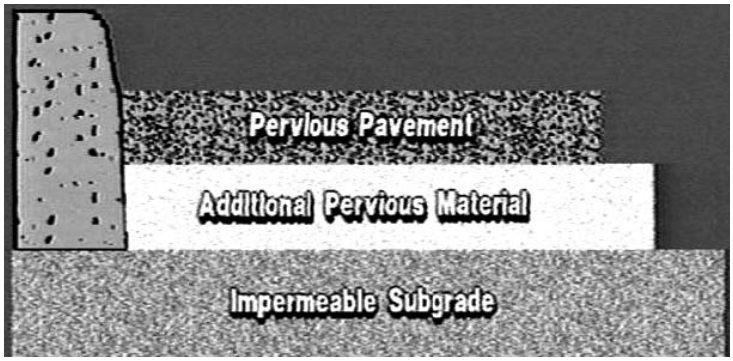


Figure 1. Typical section of Pervious Concrete. (Courtesy of Michael Young, SCCPA and NRMCA)

The effects of porous pavements are qualitatively different from those of nonporous paving materials. Porous pavements can potentially allow storm water to infiltrate into the soil, improve driving safety, empower local economies, and promote sustainable growth. Porous pavements are the most rapidly developing practice in protecting urban watersheds and aquifers. They represent a range of materials that are available for selective application in land use and development. Porous pavement materials replace impervious pavements so the underlying soil can absorb rainfall and treat pollutants. Porous pavement materials can economically provide safer driving surfaces than the impermeable materials they replace.

What are impervious surfaces. Impervious surfaces are collection pans and discharge chutes for rainwater and pollutants. They seal over the soil pores and deflect rain water into surface channels where it concentrates into downstream floods. Runoff carries with it oils from cars, parking lots, maintenance yards and storage areas, metals from construction materials, herbicides, pesticides and nutrients from landscapes.

Impacts of impervious surfaces. The development requirements that increased the dimensions of streets, driveways, parking lots and the dependence on auto transportation caused an increase in impervious pavement. The new impervious pavements generate runoff that is accelerated by the new curbs serving as structural channels.

Almost any contemporary land use produces impervious coverage. Statistics show that residences that were built on two acre lots produced impervious cover of about 12 percent. The pavements of the roads and parking lots make up the major portion of the impervious area and the highest pollutant loads in most land use categories.

Porous pavement for streets. The purposes of porous pavement materials are to limit runoff at the paved source, eliminate oils and other street pollutants. The principle features of porous concrete are: open-graded aggregate bound by portland cement. The open structure of the pavement will allow the pollutants to get in contact with the soil and be treated naturally.

The characteristics of porous concrete pavements are superior to their impermeable counterparts. They have a better drainage system because water will fall through the voids in the pavement surface. In wet weather they produce better traction and better visibility. Their structural performance is the best because saturation of the subgrade during storms is already within the design guidelines for all pavements, (Forsyth 1991, and Sorvig 1993). Porous pavement is a pavement structure and a part of the runoff treatment and drainage system. It eliminates the necessity for specialized treatment structures downstream.

Comparing pervious concrete to conventional concrete properties. The strength of pervious concrete is less than conventional concrete due to lower density and higher void ratio. The durability and freeze-thaw cycles for these concretes are similar. Porous concrete is open graded with smaller size aggregates and a lower water cement ratio. These characteristics result in higher curing sensitivity and lower shrinkage and cracking. Other applications for pervious concrete are: slope stabilization, tree grates in sidewalks, swimming pool decks, pavement edge drains, and subbase for conventional concrete pavement.

The environmental benefits of porous concrete includes: reducing the stormwater runoff, replenishing water tables and aquifers, minimizing flash flooding and standing water, and preventing warm and polluted water from entering our streams.

Mitigates surface pollutants. Porous concrete is not an oil-based pavement material. Oil based asphalt pavements can actually contribute oil based pollutants. Because of the oil content of asphalt, old recycled asphalt could not be used as an aggregate near streams to minimize soil erosion.

Reduce first flush pollutants. Oil, anti-freeze, and other automobile fluids are samples of first flush pollutants. They accumulate on the surface of the pavement itself and are flushed off the surface and into traditional stormwater utilities.

Treats pollutants naturally. Natural treatment of pollutants is self explanatory. The contaminated water percolates into the ground and soil chemistry and biology "treat" water naturally.

Large spills are contained and handled easily. Large spills can be contained to the pervious concrete which is better than having them run off into traditional stormwater utilities, streams, rivers, lakes, and oceans. The pervious concrete may have to be removed, but this is still far cheaper than cleaning up the aforementioned alternative.

Pervious concrete is an Environmental Protection Agency (EPA) best management practice (BMP). Pervious concrete is an EPA BMP because it prevents stormwater pollution, reduces runoffs, and lowers the heat island effects. Pervious concrete is eligible for one LEED credit point for the USGBC Green Building Rating System. Other credits can be earned by using concrete.

Cost advantages of pervious concrete. There are several cost advantages associated with using pervious concrete, including the assistance in zoning ordinances which are passed throughout the country. The main purpose of these ordinances is to limit the amount of impervious surfaces by percentage on a building site. The state of North Carolina officially recognizes pervious concrete as "un-built land" that does not count in the square footage of impervious surface. Municipalities are charging utility fees or taxes based on the amount of impervious surfaces at a business or residence, such as Dekalb County in Georgia. More municipalities are looking to this type of taxation to recoup expenses to refurbish and create new stormwater utilities. Pervious concrete eliminates the need for detention ponds and other costly stormwater management practices. If there is no runoff there is no need for a holding pond. Also, the surrounding area of the building will be cooler due to light reflective pavement, consequently reducing the cooling cost for the building.

Pervious concrete provides for more efficient use of land development. There are three surface area components of a building site; 1) the square footage of the footprint of the building 2) the necessary amount of square footage need to accommodate the parking area requirements of the building and 3) the square footage requirements to handle the storm water runoff generated by all the impervious surfaces. With pervious concrete, less land is needed to accommodate all three of these demands. Pervious concrete can be used in lieu of purchasing additional land for such requirements.

Engineering and construction properties mix design. Trial batches with a local ready mix producer are highly encouraged prior to first usage in a given market. A different market means there is a potential for slightly different raw materials that may require fine tuning prior to actual project placement. The recommended cement amount is about 600 pounds minimum per yard, fly-ash or slag substitutions are possible. The coarse aggregates are recommended to be of uniform size with about 2,200 lbs. to 2,700 lbs. per yard. The water to cement ratio should be in the range of 0.27 to 0.40. The use of admixtures, color, and fibers are optional. It is important to coordinate with a local ready mix supplier to achieve the required performance.

Fresh properties. Pervious concrete has low slump, about ½" to 2", which means it is difficult to get the concrete out of the truck. Hence, trial batches are highly encouraged. The quality control, QC, is recommended to be based on density measurements (100 to 125 pcf), as opposed to slump. The placement and haul times are reduced because of increased surface area in mix design leading to increased evaporation rates, usually one hour between mixing and placing. Admixtures can help in mixing requirements and to achieve optimum consistency. Some markets accept and encourage the use of specialty admixtures and others use no more than traditional admixtures.

Hardened properties. Typical compressive strength for pervious concrete is about 2,500 psi, with 15 percent to 25 percent void structure that facilitates permeability. It allows three to eight gallons of water to transfer per square foot. A five inch section with twenty percent voids can hold about one inch of rain water. The base design is important to storage as well. Pervious concrete would exhibit roughly half the shrinkage of normal concrete.

Durability of pervious concrete has been documented in a study by NRMCA to be successful in a freeze-thaw environment including the northwest and upper midwest. Due to the larger surface area, pervious concrete is more susceptible to sulfate than conventional concrete. Also, it is less resistant to abrasion than conventional concrete.

Construction. It is important to emphasize that construction practices vary by market, so the discussions in this section are limited to basic practices.

Placement and consolidation. Compaction is critical for optimum strength when pervious concrete is used in pavement. The top half inch is compacted, and spacers are removed after screeding and prior to compaction with the steel roller. Then the section should be covered, preferably with poly.

Finishing. Finishing is accomplished with a bull float. Screeding is possible without the use of the half inch spacer when specialty admixtures are used. Note that different markets have different placing and finishing techniques that can achieve success. It is highly recommended to utilize a pervious concrete specialty contractor. This need is similar to that of using a specialty contractor for colored concrete.

Joint placement. Joints are typically placed every twenty feet using a salt roller or a pizza cutter. No joint sealant is needed. It is standard practice by some contractors not to place joints because there is far less drying shrinkage with pervious concrete when compared to conventional concrete. Also, the irregular surface of pervious concrete hides most contraction joints and cracks that might occur.

Curing and protection. Curing pervious concrete is critical due to the porosity and low water-cement ratio. The pavement section should be covered with poly immediately after finishing is complete. If necessary insulating blankets on top of the curing poly should be applied. Depending on weather conditions, pervious concrete mix can be modified to meet demands. But curing for seven days, then opening the area to traffic would be better.

Maintenance. The only maintenance practice needed may be to vacuum or pressure wash to restore permeability. The need to do this can be reduced in the layout of the pavement design which restricts the flow of debris onto the pavement surface. Further maintenance practices are still being developed.

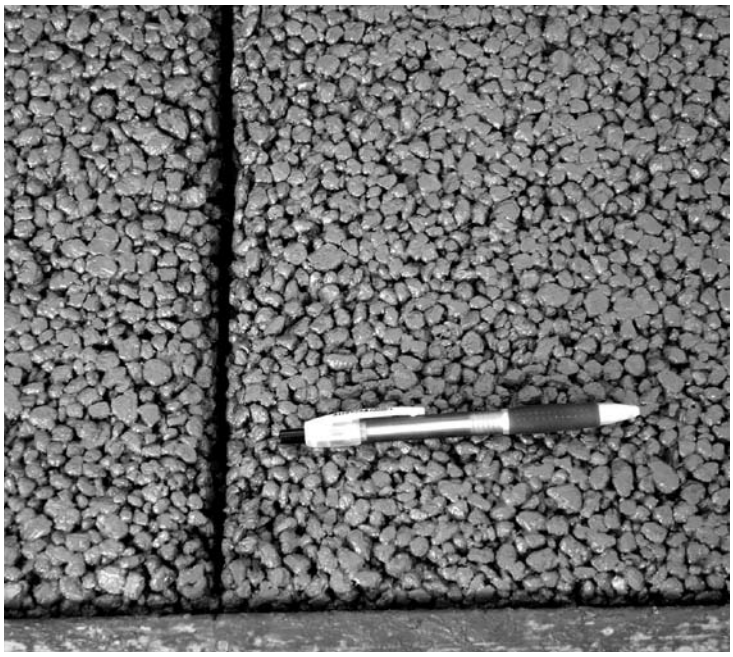


Figure 2. Great final appearance. (Coutesy of Michael Young, SCCPA and NRMCA)

Support local economies. Concrete mix designs are adaptable to different regions and are able to make use of available materials for course aggregates and other ingredients. Concrete also requires a relatively low transport time in order to avoid solidification. Therefore, its use in construction minimizes transportation costs and related energy consumption. Choosing pervious concrete supports local economies by employing nearby companies for transport and placement, and by making use of regional materials.

Low life-cycle cost. Concrete pavements have a significantly lower life-cycle cost than alternatives such as asphalt. Although the initial cost of pervious installation may be slightly higher, concrete saves money in the long run due to its superior durability and strength. It requires fewer repairs than asphalt, and has a longer overall lifespan as well.

Pervious concrete is also economical in that it minimizes the need for runoff retainers, reducing property costs. There is very little overproduction since it is made directly on-site and as-needed, and it can be recycled once it has reached the end of its life-cycle. Thus pervious concrete is widely recognized as the lowest life-cycle cost option available for paving.

Acknowledgement. Dr. Saber is conducting his research on pervious concrete with support from several industry and government agencies, including Mr. Michael Young, Director of the South Central Cement Promotion Associations, Louisiana Transportation Research Center, and Mr. Charles Poole, Vice President of James Construction Group.

***Dr. Aziz Saber**, is the Larson Professor and the Chair of the Civil Engineering program in the College of Engineering and Science at Louisiana Tech University. In 1998, he received his Doctor of Philosophy from the Georgia Institute of Technology, in 1985 his Masters of Science in Civil Engineering from the University of Michigan and in 1984 his Bachelor of Engineering from the American University of Beirut.*

Dr. Saber's research integrates the design and construction process to combine traditional and advanced materials to develop innovative structural systems for natural and manmade hazards. His research program is based on theoretical, numerical, and experimental methods. His research projects combine field instrumentation and long term monitoring with finite element modeling to simulate the behavior of structures and their structural components. His research activities focus on developing innovative ideas to optimize the design process and transfer technology between different areas of infrastructure. He teaches graduate and undergraduate courses at Louisiana Tech University and has extensive professional experience in the design, planning, construction, and administration of large scale civil and structural projects.

Dr. Saber has received numerous awards and honors for his research and teaching. He serves on several National Committees, including the Transportation Research Board Committee on Concrete Bridges. He also serves as the academic representative on numerous committees for the Louisiana Transportation Research Center.

The Louisiana Section's Hidden Jewel

By Patrick Landry, PE, Vice President

In this internet age, everyone has their favorite websites to surf. For newshounds, CNN.com, MSN.com and FOXNews.com are popular sites and sports enthusiast frequent CBSSports.com, ESPN.com and SportingNews.com for the latest information on your favorite pro or college sports team. If you are a civil engineer, and in particular, a *Louisiana* civil engineer, there is one site that you should be visiting on a regular basis – **www.lasce.org**, the official website of the Louisiana Section.

Our site, **www.lasce.org** has evolved from its fledgling infancy just a few short years ago, into an award-winning website with the presentation of the **Outstanding Section and Branch 2007 Web Award** for large sections or branches. Only three other sections or branches in the nation received such recognition in 2007. Other award recipients included the Maine Section, Arizona Section and the Orange County (California) Branch. The award was based on web format, content and special features including timeliness of information. Most of the credit for our nationally recognized website goes to our former Webmaster, Mr. Jim Porter. Over the years, Mr. Porter has continually developed and improved the website by adding current news features, seminar information, and section, branch and student chapter information. I have personally visited at least fifteen other states' websites and can tell you firsthand that your Louisiana Section website, **www.lasce.org**, is one of the very best in format, quality and quantity of information provided.

With Mr. Porter's recent retirement as our Section's Webmaster, I have assumed his duties for the 2008-2009 administrative year. Recent additions to the website revealed that we had less than 100 visitors during the months of November and December, 2007. Considering that the Louisiana Section has almost 2,000 dues-paying members, it is evident that most members are not taking advantage of our little "hidden jewel"; while many may not even know that it even exists.

We have tried to develop our website to be a "one-stop-shop" for civil engineers to get information they need regarding our profession and the state organization and local branches that represent them. Pertinent civil engineering news items that you need to know about are added regularly. A calendar feature lists all of the important meetings and state or branch-sponsored conferences, and for those needing additional PDH's, a listing of many ASCE-sponsored national seminars is posted. Our current issue of the LOUISIANA CIVIL ENGINEER journal, recently awarded the 2008 National Outstanding Newsletter Award, can be viewed, as well as past journals.

Through the website, engineering firms are offered the ability to post job opportunities for prospective employees. This is one of the most valuable features offered by the website, and it is absolutely free to employers and those seeking employment. In the **Organization** section, the officers and board of directors of the Section, as well as the officers of the four Branches and six Student Chapters are listed. The **Operating Guide**, **Constitution** and **By-Laws** of these respective organizations are listed also. The website recognizes the Annual Section and Branch award winners and the Distinguished Senior Civil Engineering students from each student chapter. Finally, the website provides our members with the opportunity to update their member profile, while allowing non-members the ability to join ASCE through a direct link to ASCE National's membership homepage.

As the Section's Webmaster, I invite you to visit YOUR award-winning Louisiana Section website at **www.lasce.org** and discover the "hidden jewel" that puts mountains of information at your fingertips. If you have any questions or have information to add to the site, please email me at patrick.landry@la.gov.

SECTION NEWS

President-Elect Christopher Knotts, PE accepts the Outstanding Section & Branch Newsetter 2008 Award from ASCE President D. Wayne Klotz, PE at the recent 2009 ASCE Workshop for Section and Branch Leaders. The workshop was held at Cherry Hill, New Jersey on February 6-7, 2009.

NEW ORLEANS

By Nathan J. Junius, PE, President

The New Orleans Branch has been busy over the past few months engaged in numerous activities on behalf of the membership. Beginning with the ASCE National Conference held in Pittsburgh Pennsylvania this year at which I had the privilege and honor of representing the branch. This year's theme was "Engineering: The workforce of the Future". There were many speakers whose topics ranged from engineering education to engineering leadership.

The membership meetings started with Joe Becker speaking at Ralph's on the Park in November. Mr. Becker, General Superintendent of the New Orleans Sewerage and Water Board, spoke about the upcoming projects at the Sewerage and Water Board and the progress they have made since Hurricane Katrina. The December membership meeting was held at Barreca's Restaurant and the guest speaker was Carlton Dufrechou of the Lake Pontchartrain Basin Foundation. Carlton stressed the need to save Louisiana's coast as it has always been our first line of defense against hurricanes for Southeast Louisiana. The last New Orleans Branch membership meeting was held on January 26th at Zea Rotisserie & Grill. The speaker was Charlie Buckels with Redflex Traffic Systems. Anyone interesting in submitting a speaker, topic or restaurant can send suggestions to njunius@lhjunius.com.

The structures committee held a meeting on November 12th at UNO on Local Building Design Codes and IBC 2008 Code. Paul May, Curtis Mann and Subhash Kulkarni, PE spoke at the well attended meeting.

The New Orleans Branch younger member committee has been very active as well. The most recent meeting was held at Pat Fannie's which included a white elephant gift swap.

The board attended a web training seminar on December 12th to take more control of the website and provide more information to the members online. Please visit www.asceneworleans.org for upcoming events and news.

As always the board is interested in hearing from our members and encourages your input. You can always contact me at njunius@lhjunius.com with any questions, comments or ideas how we can better serve our members.

SHREVEPORT

By Todd Henry, PE, President

On December 18, 2008 the Shreveport Branch hosted its Annual Christmas Luncheon and gift card raffle. We had a good turnout and six people went home with a $25.00 gift card to a local store or restaurant.

The Student Chapter at Louisiana Tech University hosted its Annual Winter Banquet on January 28, 2009 at 6:00 pm at the Thomas Assembly Center. The Shreveport Branch will be awarding two scholarships. The first scholarship will be for the outstanding senior civil engineering student and the second will be for the outstanding junior civil engineering student. Each student will receive $1,000.00.

January 15, 2009 – Bill Altimus, Butch Ford, PE, and Ali Mustapha, PE discussed the Bossier Parish Police Jury Drainage Impact Guidelines for New Development, No-Rise Certificates, and City of Shreveport Detention Requirements. If you are new to Shreveport/Bossier or to projects requiring no-rise certificates or detention, you can contact Todd Henry at thenry@alliance-ae.com for information on this presentation.

February 10, 2009 – As everyone knows, February is the month we celebrate E-Week. As is the tradition in Shreveport, we hosted our joint ASCE / LES Luncheon, which featured Dr. Bobby Price, PhD, PE, who made a presentation on "Ethics in the Profession."

BATON ROUGE

By Robert W. Jacobsen, PE, Past President

The Branch held monthly luncheons on October 16, 2008, and November 20, 2008. The speakers at our October luncheon were Joey Krefft with Aillet, Fenner, Jolly & McClelland Inc. and Sean Johnson with Grace and Hebert Architects. They spoke about the structural design of Alex Box Stadium and the meeting sponsor was C-K Associates. We also had a tour of the new Alex Box Stadium. The speaker at the November luncheon was Doug Jenkins with CH2M Hill and he spoke about the Sewer Program in Baton Rouge and the meeting sponsor was Insituform. At this luncheon we had a food drive collection for the Greater Baton Rouge Food Bank. They are a non-profit organization that serves 11 parishes in Southeast Louisiana. We would like to thank everyone that participated in the food drive.

The Christmas Party was held on December 5, 2008 at the Baton Rouge County Club. We had about 130 members and guests in attendance.

For 2009 we had our first luncheon on January 15, 2009 at Drusilla Seafood Restaurant. Our speaker was Davis Rhorer Executive Director of the Baton Rouge Downtown Development District. We will have no luncheon in February but will be awarding scholarships to students at LSU and Southern during E-Week. The next luncheon will be on March 19, 2009 at Drusilla Seafood Restaurant.

BATON ROUGE BRANCH RECEIVES 2008 STATE PUBLIC RELATIONS AWARD FROM ASCE NATIONAL

By Jeffrey L. Duplantis, PE, ASCE Baton Rouge Branch President-Elect, SPAG Chairman

Over the course of history the American family has become more mobile. There are more vehicles on highways today than were ever planned for. This is evident in the congested highways and roadways throughout many of the cities across the country and this has become an even more noticeable issue within Baton Rouge following Hurricanes Katrina and Rita. Following these storms, Baton Rouge became the largest populated city in Louisiana. This increase in residents required new planning, design and construction, and in the middle of it all were the local Civil Engineers. The firms and individuals of the Baton Rouge Branch played an important role in the recovery efforts throughout our community as they have done historically in this area.

As part of the Baton Rouge Branch's program to improve public awareness of the civil engineering profession they developed an area wide advertising campaign to coincide with National Engineering Week. Baton Rouge is centered around the interstate highway system that cuts directly through the middle of the city. Interstate Highway 10 enters the Parish from the west as it crosses over the Mississippi River. As it makes its way through the city it splits at Interstate Highway 12 and then runs south towards New Orleans, while I-12 continues east towards Mississippi. With such a prominent highway system running through the city it was obvious that advertising along these corridors would easily gain the attention of thousands of the target audience.

With most families having two working parents, this has doubled the number of vehicles the average family has as compared to even a single generation ago. Marketing to these mobile families has become big business for corporate America, just look at the number of drive thru or fast food

continued on next page

Baton Rouge Branch Receives 2008 State Public Relations Award from ASCE National, *continued from page 20*

restaurants that are popping up all over the city. Many commuters spend well over two hours a day going to and from work, not to mention running their children around town to practices, classes or other after school activities. With all of this time being spent in their car, what better way to reach them than billboard advertising.

The US Census 2000 estimated that there were approximately 603,000 people residing in the metropolitan area of Baton Rouge prior to the events of August 2005. Other counts had the Pre-Katrina figure at nearly 723,000. Following the hurricanes it was estimated that within a matter of weeks there was a significant increase in people. Counting vehicles at key spots yielded an increase of 230,000 not long after the storm. More recent counts from the Baton Rouge Area Chamber places the permanent population growth at around 30,000 to 50,000.

These two arteries have the highest traffic counts within Baton Rouge, ranging between 70,000 to 120,000 vehicles daily. By advertising along these interstate highways there appeared to be a constant presence of vehicles since nearly everyone has a car and could be potentially exposed to one of the billboard advertisements.

With all of the construction going on in and around the Baton Rouge area, the Baton Rouge Board felt that was an opportune time to reach out to the public to educate them on the contributions the civil engineering profession is making to their day-to-day lives. Motorists see the construction work, but typically don't realize who is responsible for the planning and design.

The program was intended to educate the public on the diversity of the civil engineering profession, and the Board wanted to try and get a message out to not only the residents of Baton Rouge, but also to those motorists passing through our city.

As part of our partnering efforts, Baton Rouge Branch President Bob Jacobsen made an appearance on the morning program at one of the local television stations the week before Engineering Week. Mr. Jacobsen was able to discuss the importance of civil engineering in the current economy and the mission of E-week as it relates to the local universities as well as the area high schools and elementary schools. He also used this opportunity to mention the billboard advertising campaign that was going on within the City.

With the assistance of ASCE National and the Louisiana Section, the Baton Rouge Board decided that the ASCE advertising program would be scheduled for February 2008 to coincide with National Engineering Week. The new Smart Board located at I-10 and College, the busiest intersection in the city was targeted as the location for the billboard. It is the newest technology in billboard advertising with a 14' x 48' digital display. This board was rented for the entire month of February. This was a means to target as many people as possible.

The campaign was hugely successful and was featured not only on the cover of the *Louisiana Civil Engineer Journal* magazine, but was also highlighted in an *ASCE NEWS* article.

One of the latest recognitions that the billboard campaign has received was the ASCE National 2008 State Public Relations Award. Baton Rouge Branch SPAG Chairman Jeff Duplantis attended the ASCE National Convention in November 2008 and was honored to receive the award from ASCE Past-President David Mongan.

It was the goal of the Board to reach out to the typical person and to provide them with information regarding the range of services that civil engineers make to their daily lives. The objective of this program was to present a better understanding of the extent and importance of civil engineering contributions to the world as we know it today.

With a current membership of approximately 650 civil engineers, the Baton Rouge Branch makes up only a very small fraction of the population currently residing in the metropolitan area. It was the intent of this program to reach as many of these non-engineers as possible to publicize Engineering Week and the civil engineering profession in particular.

Based upon the wide array of positive feedback and attention that this campaign has received, the Baton Rouge Board feels they have achieved these goals. The Board will continue to promote the civil engineering profession through its many community efforts as well as through its 2009 Billboard Advertising Campaign.

Editorial: 2009 Report Card for America's Infrastructure

By Deborah Ducote Keller, PE

Every four years Americans raise their expectations that a change in our nation's leadership will result in change for the better. In 2009, especially since there is a new presidential administration, we civil engineers hope that our national infrastructure takes a priority with both President Obama and Congress. The many challenges our nation faces such as the economic recession, health care, education, the war on terror, and alternative sources of energy will no doubt compete against addressing the declining state of our infrastructure.

On March 25, 2009 the ASCE Report Card on the nation's infrastructure will be released to the public. While ASCE expects more dismal grades as previously reported, the ASCE Committee on Critical Infrastructure is offering viable solutions. On a statewide and local level, we need to do our part as engineers to promote principles that can be the foundation for revitalizing our infrastructure, as well as preventing disaster.

Be sure to read upcoming news from ASCE regarding this issue. ASCE estimates that $1.6 trillion is needed over a five-year period to bring the nation's infrastructure rating to a good condition. In the meantime, here are some thoughts about tackling the problem.

Help from the Federal Government- The enormous time, effort, coordination, program management, and funding for re-building America's infrastructure needs committed leadership on the federal level. National initiatives at the federal level built much of the original infrastructure, and time has shown that state and local governments are not able to maintain and modernize it. After Hurricane Katrina, southeast Louisiana became the poster child for the difference federal assistance can make with regards to flood protection infrastructure. Unfortunately it took a disaster of historic proportions and tremendous effort by the elected officials and citizens to secure that federal assistance. Must there be equally tragic events to highlight the problems with transportation systems, water resources, and other critical infrastructure?

Sustainable Design and Construction –Today's infrastructure must receive more than piecemeal, band-aid repairs that extend the useful life of functionally obsolete infrastructure. However, the way projects have been funded, prioritized, and built are often short on vision and long on promises that it's the best government can do. Sustainability is the culture that leads to efficient, technological advanced, and durable design and construction practices.

Unified Approach –Along with a committed national leadership and funding, to rebuild our nation's infrastructure requires a comprehensive, holistic approach. Rather than compete among ourselves, state-by-state, parish-by-parish, neighborhood-by-neighborhood, we need a unified set of goals and strategic planning. The space program achieved success because the goal was so well defined. President Kennedy said, *"I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth.* From that mission statement came the entire space program with the same elements (organization, funding, vision, unity) that is required if we are to improve civilization in our corner of planet Earth.

Maintenance – Our culture is a disposable society. Our mentality is that if it's broken; throw it away because even if it could be repaired, it's probably already obsolete or cheaper to buy it new. That's the wrong approach to infrastructure that costs millions and now sometimes billions. The infrastructure America must build also has to consider life-cycle costs so that it is affordable to maintain and easily adaptable in the future. The cheapest capital cost philosophy will not only burden future Americans with the price of paying for this infrastructure, but also make it difficult to afford to operate and maintain it safely and prudently.

Be Heard-You receive this journal because you are a member of the premier organization that speaks for the American civil engineer. Educate yourself and take advantage of this unified voice. Go to:

http://www.asce.org/reportcard/2005/index.cfm

Take the initiative to the local level by educating your family, friends, neighbors, and elected officials about the condition of America's infrastructure. Participate in ASCE's call to action.

The infrastructure categories are roads, bridges, transit, aviation, schools, drinking water, wastewater, dams, navigable waterways, solid waste, hazardous waste, energy, rail, parks and recreation, and **new in 2009 LEVEES!**

Electronic Plan Delivery at DOTD

By Hollis C. Ward

Hollis C. Ward

Introduction

I appreciate the opportunity to provide an update on the status of DOTD's electronic plan delivery process. There are many challenges as we change long-practiced plan development and delivery procedures. I know that keeping up with these changes can be a struggle at times; and I understand that anything I can do to clarify the road ahead is important.

This article provides an overview of DOTD's strategy and preparation for full implementation of Electronic Plan Delivery, along with some specific information on several critical areas of concern for members of DOTD's project development community.

The Road to Electronic Plan Delivery

In 2001, DOTD embarked on a journey to a new and uncharted plan development and delivery world. During the early days there was some awareness of what we needed to accomplish; but the path to the end of the journey was uncertain. There were many potential barriers to success, including internal and external resistance to change, and lack of clarity about the mandate and resources needed to complete the journey. At a 2002 seminar in Baton Rouge, consultants and designers were informed that DOTD was pursuing electronic standards for plans. They were also introduced to CADconform and ProjectWise.

The "Plans Committee" took up the task of evaluating plans management systems and plan delivery processes in 2003. This committee laid groundwork in several design automation areas; and provided documentation and analysis that resulted in the decision to acquire Falcon for plans publishing and ProjectWise for plans management and collaboration.

In 2005, DOTD Process Improvement Task Team 7.6, consisting of members from DOTD Project Development, DOTD Information Technology and consultant partners, developed an action plan to implement standards for internal and external plan delivery in the following automation areas:

- Plan development software (MicroStation, Inroads, etc.).
- Data standards (data formats and CADconform).
- Data management and collaboration system (ProjectWise).
- Electronic Plan Room system (Falcon SVP – "Electronic Plans Distribution Center").
- Contractor question and answer collaboration system (Falcon SVP – Q&A enhancement).
- Digital Signatures (Silanis ApproveIt Desktop).

The Process Improvement Program, now known as Quality and Continuous Improvement Program (QCIP), provided the mandate, focus and momentum required to put our journey on the right track; and helped prepare us for the many challenges ahead.

The road to Electronic Plan Delivery has been demanding. New software systems must be configured to work together and work in the DOTD project development world. Different project development groups and programs have to be considered. It should be noted that several other major automation initiatives have been going on at the same time. IT personnel and other groups who have contributed to this effort should be commended for responding to the tremendous load that they have had to shoulder. DOTD and consultant project development personnel should also be commended for enduring so many changes at the same time that the project workload has been elevated.

CADconform Overview

Altiva CADconform is a CAD standards program that runs on both MicroStation and AutoCAD platforms. This toolbox performs the following core functions:

- Creates CAD data standards and drafting menus for linework, annotation, symbols, etc.
- Draws to CAD data standards using the drafting menus.
- Checks and corrects drawing elements interactively (e.g.: spell checker).
- Certifies CAD standards compliance with a watermark that will invalidate if the drawing is modified.

DOTD acquired CADconform in 2001 because of its potential to improve the general quality and consistency of construction plans. While some project participants created excellent plans, others delivered inconsistent and/or hard-to-read plans. There has long been a need for an efficient way to enforce standards for line styles, annotation styles, levels (layers), etc.

CADconform was also recognized as a tool that could improve collaboration between internal and external partners during project development. CADconform empowers drafters to use standard tools to seamlessly share, edit, view, and print CAD work.

The predictability of the CAD drawing data also enables DOTD consultants to optionally create drawings in AutoCAD. AutoCAD

drawings must then be translated to MicroStation (using mapping tables provided by DOTD) for sharing with other project collaborators and for plan delivery.

CADconform is indispensable in providing the tools required to meet DOTD CAD standards objectives, including 100% CAD standards compliance.

Using CADconform Effectively

It is not unusual for software users to simply dive in and learn by doing. This is an unwise strategy with CADconform. CADconform is easy to use, but users should not take a casual approach. Here are some tips to consider:

- Become familiar with the 'Help' documentation on the CADconform menu. It is all good! Read "LaDOTD Standards Help" in its entirety. CAD software packages are simply toolboxes that can be used in many ways. This document provides many essential concepts that you will need to know in order to construct your drawings the "*DOTD Way"*.

- Avoid costly oversights: Thoroughly review and understand "LA DOTD Software and Deliverable Standards for Electronic Plans" which can be found along with CADconform and ControlCAD software downloads on the LaDOTD CAD Standards web page at www.altivasoft.com/ladotd.

- Use the CADconform Draft menu to create new drawings. Some users have reasoned that it would be easier to use familiar methods to create drawings and then, when finished, use the "Conform" tool to update the drawing to DOTD standards. Drawings conformed this way can take from thirty minutes to two hours to fix; and it is more likely that the wrong standard will be applied to some drawing elements. You do not want to run up against this issue when getting ready to deliver plans!

- Expand the Draft menu and become familiar with how the drawing features are arranged before proceeding. Become familiar with the feature names, so that you will know what you are looking for when attempting to fix drawing errors with the Conform checker. Also, learn how to use the tools on the Conform checker so that you can efficiently use them to fix drawings.

- If you are having a difficult problem with a CADconform tool, contact Altiva Support. They are the experts and will do everything possible to resolve your problem. Remember to not take advantage of their good graces. Altiva Support should not be used as a substitute for a CAD Manager, software platform support services, such as Bentley Support, or for reading Help documentation.

- If you need help using DOTD standards of find errors in the standards, please do not hesitate to contact me or a designated DOTD discipline contact. Also, feel free to contact me to contribute ideas for future development of DOTD CAD standards.

- Consider using the MicroStation platform to create CAD drawings as AutoCAD introduces inefficiency to the process. DOTD does not use AutoCAD and cannot directly support the AutoCAD workflow. Not all CADconform software features and settings for MicroStation are available yet in AutoCAD, which can sometimes cause inconsistent results. AutoCAD drawings have to be translated to MicroStation for formal electronic drawing submittals and other requests. Errors may occasionally occur during translation. Such issues add additional time to the plan delivery process. Carefully consider the pros and cons of using AutoCAD.

ControlCAD

ControlCAD is a suite of products that Altiva provides in addition to CADconform. DOTD uses the following three components.

- DeployCAD: This tool is used to deliver and install CAD resources for MicroStation and AutoCAD. Such resources include, among other things, drawing borders, seed files (drawing templates), font and line style resources, level libraries, cells (blocks), plot settings and CADconform drafting menus.

- Indexer: This tool is provided free of charge so that consultants can index plan submittals by applying attribute values in an efficient interface. XML format index files and associated drawings are delivered to DOTD using the Submittal tool (described below). When the Submittal tool uploads these files into ProjectWise, the XML attribute values populate the ProjectWise document "Attributes" page. In the not-too-distant future, when digitally signed PDF drawings become the documents of record, document attributes will also be sent to the Falcon publishing system. Index attributes are used in ProjectWise and Falcon to search for a specific subset of drawings for publishing, reference, reuse or printing purposes. Altiva may soon integrate Indexer with CADconform to facilitate populating title blocks with attribute values.

- Submittal: This tool is used by consultants to package and deliver turnkey electronic plan submittals to DOTD. The DOTD Plans Manager (this is a new functional title) will run a "Verify" command to check the submittal. 'Verify' checks for compliance with various submittal requirements including, but not limited to, the following: MicroStation DGN file and associated CADconform Certification Stamp, XML Index file, DGN Reference files, PDF file (if required), and PDF digital signature (if required). Results are displayed in Submittal's interface. Results and index attribute values are also written to an Excel spreadsheet report. *The Plans Manager is authorized to accept or reject the submittal based on the results.*

ProjectWise

ProjectWise is a data management and collaboration system by Bentley Systems. This platform performs the following core functions for DOTD:

- Centrally manages DOTD project plans; each in a single, secure project folder.

- Maintains MicroStation drawings and other design data in discipline-specific project subfolders.
- Houses all project Standard Plans and Special details in a "Standard Drawings" subfolder. Standard Drawings are not delivered to consultants.
- Maintains published PDF files for all formal drawing submittals in a "Published Drawings" subfolder.
- Houses selected project documents, such as proposals, pre-design data, reports, plan reviews, etc., in a "Published Documents" subfolder.
- Document "Attributes" page facilitates indexing of project drawings, and other documents as needed. Attributes will also be used to automatically populate drawing title blocks in the near future.
- Provides a folder structure for each consultant to exchange project data with DOTD. These folders can be accessed using ProjectWise Explorer (available from Bentley) or ProjectWise Web Explorer (free, but lacking some significant functionality).
- Manages development of DOTD Standard Plans and Special Details in a "Private Access" folder.
- Manages PDF format "Information Purposes Only" copies of Standard Plans and Special Details in a "Public Access" folder for review by project collaborators.
- Associates CAD workspace standards with discipline folders.
- Restricts folder and document access to project collaborators only.
- Will provide the functionality to efficiently publish and digitally sign PDF drawings in ProjectWise.

Digital Plan Publishing

Imagine if you could publish formal submittals for your discipline to PDF format in ProjectWise using the following simple workflow:

- Select MicroStation drawings to publish.
- Right-click and select "Publish to PDF" (Bentley "Easy Publish" dialog box then appears).
- In Easy Publish, select "Publish Submittal."

At this point, Easy Publish will go to work on a dedicated server to:

- Automatically select the appropriate plot settings.
- Create a submittal folder (example: "95% Final Plans").
- Create output PDF files and send them to the submittal folder.
- Copy document attribute values from the input MicroStation drawings to the output PDF files.
- Notify key project participants by email when the submittal is finished.

Bentley Systems recently delivered a functional specification for development of Easy Publish to DOTD requirements. If funded, this application should be in production this fiscal year before 07/01/09.

Standard project delivery data formats, along with improvements in the ProjectWise System, raise some provocative possibilities. The Easy Publish application could encourage some consultants to use ProjectWise to create their MicroStation drawings, create PDF submittals and digitally sign the PDFs in ProjectWise. The new ProjectWise V8*i* "Delta File Transfer" functionality, when implemented, will enable fast file loading by transferring only parts of files that have changed when files are opened or saved. These new functions will also enable project collaborators to work together efficiently in DOTD's ProjectWise environment, when dictated by project circumstances.

Digital Signatures

Digitally signed PDF files, as the document of record, may be closer than many think possible. I expect that DOTD's proposal will be presented to the Board of Professional Engineers and Land Surveyors, Law and Liaison Committee, as early as January 2009; and hopefully the details will be resolved in the March meeting. If this effort is successful, DOTD may start publishing digitally signed drawings later in 2009. This would soon mean the end of paper deliverable plans with inked stamps and signatures.

Conclusion

I can now report that we are nearing the end of our journey to electronic plan delivery; and uncertainty is rapidly becoming a thing of the past. I believe that the DOTD project development world will realize a great benefit from all of the work that many have contributed to make electronic plan delivery a reality. The end of this journey only opens new possibilities for how we can enhance this new environment.

Hollis C. Ward *is an IT Management Consultant 2 for the Louisiana Department of Transportation and Development, Project Management Section. He has 35 years experience working in project delivery areas, including 23 years as an engineering technician (primarily in Bridge Design) and 12 years supporting Design Automation full time. As the functional "Design Automation Manager," Hollis is responsible for managing DOTD's "Electronic Standards for Plans." His duties include, among other things, managing DOTD's CADD System and coordinating integration of DOTD's plans management systems (ProjectWise and Falcon) into the plan delivery and publishing workflow. Hollis played a pivotal role in plan-delivery automation as Co-Chair of the "Plans Committee" and Chair of Process Improvement Task Team 7.6. Hollis attended LSU from 1967 to 1971. His studies included Mechanical Engineering and Landscape Architecture. He has received the Secretary's Award of Excellence and DOTD Employee of the Quarter awards.*

ASCE-SEI New Orleans Chapter Report

By Om Dixit, PE, FASCE, Newsletter Editor

Since our report in August issue of this magazine, ASCE SEI New Orleans Chapter hosted one seminar and has planned the following future seminars in New Orleans:

November 12, 2008

Local Building Design Codes and IBC 2008 Code

Paul May and Curtis Mann from City of New Orleans presented the special problems of Code compliance for Structures in City of New Orleans. They also shared the special problems after Katrina. Subhash Kulkarni followed the invited speakers and gave a few intricacies of IBC Code. Seminar was attended by about 70 members.

January, 28, 2009

Using the 2008 MSJC Code and Specification –

Dr Richard Klingner,

University of Texas, Austin, Texas

This seminar will deal with the changes and usage of ***Masonry Standards Joint Committee's (MSJC) 2008 Building Code Requirements and Specification*** for Masonry Structures. The new code includes numerous changes and enhancements including provisions on self consolidating grout, reformatted and clearer seismic design requirements, revised anchor bolt capacity equations, and defined inspection frequencies of key aspects of masonry construction.

Future Seminars:

The following dates are the projected seminar dates for 2009. The exact dates may change due to the availability of the speakers and UNO Lecture room.

March 5, 2009	To be Announced
April 16, 2009	Annual David Hunter Lecture (Dr. Kenneth Hover, Cornell University, Ithaca, NY)
June 11, 2009	To be Announced
August 6, 2009	To be Announced
October 15, 2009	3rd Herb Roussel, Jr. Marine Seminar
December 3, 2009	To be Announced

More details about these seminars will be posted on the ASCE New Orleans Branch website as soon as they are finalized. The committee is looking for good topics and speakers for future presentations. Members with expertise in above areas would be welcome to join the Executive Committee. For any suggestion and joining the Executive Committee one can contact Chairman Jay Jani, PhD,PE, at jay.jani@engconsultsvcs.com.

The Chapter will sponsor awards at Regional Science Fair to be held in February 2009.

All 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 www.asceneworleans.org. To add your name to our mailing list, e-mail Om P. Dixit at om@fenstermaker.com.

New ASCE-T&DI Louisiana Chapter is Established

By Om Dixit, PE, FASCE, Chairman

There has been a need for establishing a Technical Group for Transportation Professionals. A few unsuccessful attempts were made in past to form a group to represent this expertise. Inspired by the presentation made by Jon Esslinger, T&DI in September'08 at Louisiana Civil Engineering Conference and Show in New Orleans, I decided to form a Technical Group for Transportation Professionals.

After meeting with New Orleans Branch and Louisiana Section of ASCE it was decided that this local chapter of ACSE Transportation and Development Institute will be formed under Louisiana Section and will serve whole State of Louisiana. It will be called *ASCE-T&DI Louisiana Chapter*.

Several transportation professionals were invited to join the Executive Committee of this group and the first executive committee meeting was held on November 18, 2008 and elected Om P. Dixit to serve as its Chairman. The Executive Committee has about half the membership from Baton Rouge area and the other half from New Orleans area. The committee will meet monthly to plan the activities for transportation professionals in Louisiana. We would like members from private sector and government agencies. The area represented on the committee will be from road and bridge design, planning, environmental, traffic, safety, ports, and railroad. There are several vacancies on the committee. Anyone interested in joining Executive Committee should contact *Om Dixit, Chairman*.

The Executive Committee has decided to meet in New Orleans area and Baton Rouge area at the same time while being joined via video conference. This will avoid a lot of traveling by members and increase participation. The arrangements for video conferencing are underway. I will introduce the Executive Committee members in my next newsletter.

National T&DI has approved our chapter formation and our group is the second behind Colorado to become T&DI Local chapter.

The activities of this group will arrange seminars, workshops and other activities for benefit of the ASCE and T&DI members. One does not have to be an Engineer to join T&DI. The Institutes are formed for the benefit of ASCE and non-ASCE members to participate and interact with other transportation professionals.

The Chapter is currently planning its first activity as a seminar to be announced soon.

More information could be found on the ASCE Louisiana Section website at www.lasce.org. To add your name to our mailing list and/or to join the Executive committee, e-mail Om P. Dixit at om@fenstermaker.com.

Registration/Sponsorship Open for 2009 Louisiana Section Spring Conference

The Baton Rouge Branch is hosting the 2009 Louisiana Section Spring Conference on April 14-15 at the Crowne Plaza Hotel in Baton Rouge, LA. The theme of this year's conference is "Engineering Sustainable Water Resources". The conference will include technical sessions addressing coastal, flood protection, drainage improvement, water quality, wastewater, and drinking water topics. Engineers will be able to earn over 10 PDH credits plus 1 PDH credit in Professional Ethics. The draft program, along with registration and sponsorship information, is available at the following link:

http://www.ascebr.org/documents/2009/ASCESpring2009ConferenceInfo.pdf

Please note that the deadline for early registration is April 1st, 2009.

LOUISIANA STATE UNIVERSITY

By Steven Berniard

Over this winter break, LSU ASCE members actively worked on the concrete canoe and steel bridge for the regional competitions that will take place this spring. The concrete canoe team met for two weeks over the break. Some of the things that were accomplished includes building the table that the canoe will be built on, working on the deisgn of the new mold based on Nationals specifications, and producing cross sections of the mold in autocad that will be printed out on plotter paper and glued to the boards. The goal for the concrete canoe team is to complete the canoe mold by January 24th. The steel bridge team finalized their designs and met with a welder who gave the group tips on welding. Currently, they are waiting for their steel to begin welding their bridge!

Thomas, the concrete canoe captain, building the table.

ASCE will be holding meetings at 7:30 pm in the Germano Center in the Spring Semester. The meeting dates are: February 19th, March 5th March 19th, April 2nd, and April 16th. The end of the year party will be held May 1st at a location to be determined later.

Last spring ASCE chapter members went on a field trip to go see the Huey P. Long bridge expansion, sponsored by GEC. Due to the interest in last years field trip, GEC has offered to have ASCE back to view the progress of the bridge expansion.

Two concrete canoe team members working on the concrete mix design.

Outstanding Section & Branch Newsletter 2008 Award

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— Calendar of Events —

March 18, 2009	Baton Rouge Branch Board Meeting - Downtown Baton Rouge
March 19, 2009	Baton Rouge Branch Luncheon; Drusilla Place; 11:30am; Speaker: TBD
March 19, 2009	Grand Challenges for Engineering Conference Louisiana Tech. For more info, go to www.engineeringchallenges.org
March 24-26, 2009	ASCE Leadership Training in Government Relations (the Fly-In) Washington, D.C.
March 26-28, 2009	2009 Deep South Conference – Arkansas State University
April 14-15, 2009	Louisiana Section Spring Conference Crowne Plaza Hotel in Baton Rouge. For more info go to http://www.ascebr.org/documents/2009/ASCESpringConferenceInfo.pdf
April 15, 2009	Copy deadline for Louisiana Civil Engineer May 2009 Issue
April 24-25, 2009	Professional and Fundamentals of Engineering exams (Contact LAPELS at www.lapels.com for more info)

*For more information, call ASCE toll free at (800)548-2723, visit the ASCE website: www.asce.org, or visit the Louisiana Section website: www.lasce.org.

For the schedule and registration for the ASCE web seminar continuing education regularly offered:

Visit the ASCE website / continuing education / distance learning / live interactive web seminars.

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