

The logo for Florida International University (FIU) Engineering & Computing, featuring the letters "FIU" in a bold, yellow, sans-serif font.

Engineering
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Civil & Environmental Engineering Department

CEE NEWS

Department of Civil & Environmental Engineering | Florida International University

Spring 2013 / cee.fiu.edu

The background image is a photograph of a large, modern concrete bridge with a curved, cantilevered design. The bridge spans a body of water, and several palm trees are visible on the left side. The sky is clear and blue. The image is used as the background for the entire cover.

Designing Bridges for Service Life

FIU Leads the Nation – and the World

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Spring 2013 / cee.fiu.edu



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MESSAGE FROM THE CHAIR

With 2013 underway, all of us in Civil & Environmental Engineering at FIU are excited to be embarking on another year of success for our department. We've experienced a wealth of positive changes over the past few years and are excited to begin formally publicizing the accomplishments of our faculty and the achievements of our students in this, our department newsletter.

Since the start of 2011, the CEE Department at FIU has expanded significantly with the appointments of eleven new faculty members – including myself. The added faculty members have enhanced our department's expertise and reputation in the fields of bridge, wind, pavement, and transportation engineering, and have put us at the forefront of the research being done in unique areas like designing bridges for service life, corrosion, non-destructive testing and advanced materials engineering. Please visit our web site (www.cee.fiu.edu) to read about our faculty members, their expertise and their activities.

Many members of our 28-person faculty have received major national awards and recognitions and are engaged

in cutting-edge research. But more important than any honors are their many contributions; FIU CEE faculty members are actively engaged in providing service to the academic profession at national and international levels.

As you will read in this newsletter, in January of 2011, our department established the Center for Accelerated Bridge Construction (ABC). The ABC Center at FIU has been leading some of the most important ABC initiatives in the U.S. and become a link between the bridge community, government transportation sector and overall bridge industry.

As you'll also see in these pages, the work of FIU CEE transportation engineering faculty members in 2011 helped FIU become one of only two U.S. universities to hold membership in three prestigious University Transportation Centers (UTCs). Additionally, our wind engineering group – working through the sophisticated Wall of Wind facility at FIU – has impacted Florida Building Code recommendations and brought international recognition and media attention to FIU.

Yet one thing has remained constant amidst all of the department's changes and achievements: our commitment

to providing quality education to our undergraduate and graduate students. The departmental philosophy is that the students are our main clientele; all of our activities are centered on better serving them. Enhancing our research capability has been just one way that we have not only educated and improved ourselves as a faculty, but worked to provide the kinds of top-tier educational opportunities that will help our students achieve success in their engineering careers.

We look forward to a year full of new highlights to share with you in 2013 as we continue to move forward and take on exciting new initiatives and partnerships. I hope you enjoy this 2013 newsletter. Thank you.

Sincerely,

Atorod Azizinamini, Ph.D., P.E.

Professor and Chair
Civil & Environmental Engineering
Florida International University

Lean & Green Paving – How to Get There?

Engineers Work to Find Out in First-Ever FIU Green Paving Forum

Widespread use of “green paving” methods, which are sustainable, cost-efficient and environmentally sound, would have a transformative impact on the transportation industry. Estimates show that the benefits of using asphalt technologies that reuse existing materials, prolong the life expectancy of roads, and reduce the costs and energy demands of current construction processes could translate into savings of tens of billions of dollars per year.

Yet as impactful as green paving has the potential to be, its use in practice to date has been highly limited. How should green paving’s proponents move this burgeoning industry forward?

Green Paving has a champion in **Hesham Ali, Ph.D., P.E.**, the FIU CEE Green Paving Professor of Practice. Dr. Ali has helmed a Green Paving Initiative at FIU and conducted research on green paving since his appointment to the department in late 2011. On November 26, 2012, Dr. Ali brought a number of engineers together for discussion and collaboration on the issues facing green paving at the first-ever FIU Green Paving Forum.

The forum, which was attended by over fifty people, featured presentations from a number of leaders from different sectors related to green paving: transportation, asphalt production, pavement recycling and more. Speakers from the Florida Highway Administration, Florida Department



Attendees of the 2012 FIU Green Paving Forum listen to introductory remarks from Amir Mirmiran, Ph.D., P.E., Vasant H. Surti Professor of Civil Engineering and Dean of the FIU College of Engineering & Computing.

of Transportation, Asphalt Contractors Association of Florida, and Asphalt Recycling and Reclaiming Association all provided their industries’ perspectives on green paving, as did presenters from two asphalt producing companies: Ergon Emulsions and Wax Innovations.

The perspective of the concrete industry was also represented, which served to bring the competition between proponents of asphalt and concrete, respectively, into the mix of the day’s discussions. **Dr. Michael Beinvenu**, a CEE department faculty member whose position as the Karl Watson, Jr. Professor of

Practice in Concrete Pavement Sustainability is a partnership between FIU and the Florida Concrete & Products Association, spoke about current research and recent developments in concrete pavement sustainability.

The FIU Green Paving Forum was a unique opportunity for professionals from across a multitude of industries to come together in support of expanded use of green paving in the U.S. FIU CEE looks forward to continuing to work toward the future of green paving and provide more opportunities for collaboration in the paving community. ■



FIU and UM Co-Host 2013 ASCE Southeast Student Conference

The Southeast Student Conference of the American Society of Civil Engineers (ASCE) is an annual event in which Civil & Environmental Engineering students from around the region come together to test their classroom knowledge in practical applications. This year, the ASCE student chapters from 25 U.S. universities traveled to Miami to compete against each other in civil engineering competitions.

2013 marks the second time in eleven years that the conference has taken place in Miami. Around 1,000 students participated in various contests, networking events, professional paper presentations and other activities from Thursday, March 14 to Saturday, March 16.

An entirely student-organized event, the ASCE Southeast Student Conference was co-hosted by the ASCE student chapters of FIU and the University of Miami. Undergraduate FIU Civil Engineering students Dania Castillo (ASCE 2013

Conference Chair) and Felipe Cifelli (FIU-ASCE President) spearheaded conference planning with help from a committee and oversight from ASCE Faculty Advisor Hesham Ali, Ph.D., professor in the FIU Civil & Environmental Engineering Department.

To cover the nearly \$100,000 cost of putting on the conference, FIU and UM student organizers garnered financial support from 18 sponsor organizations – many of them companies with strong ties to the South Florida engineering community.

"This conference is by far the biggest



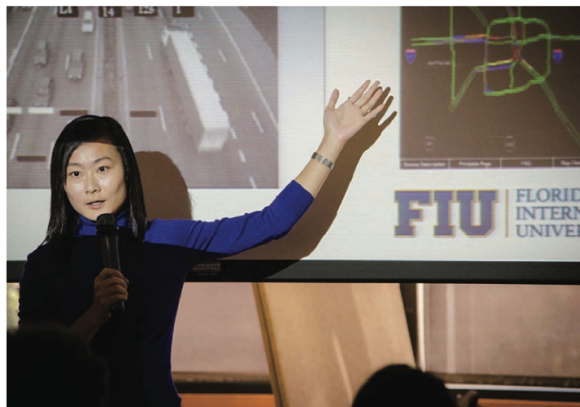
of the ASCE Regional conferences, so our small chapter had to put in a tremendous amount of effort to make it work," says Felipe Cifelli. "Whereas some regions may only have six or 10 universities attending and competing only in one or two major competitions, the southeast region had 25 universities competing in 15 competitions."

Among the many conference activities were traditional ASCE competitions – including the Steel Bridge challenge, Balsa Tower building contest, and Concrete Canoe competition – and a newcomer event that showcased FIU's preeminent Wall of Wind (WOW) research facility.

The Wall of Wind Mitigation Challenge was a brand new competition introduced exclusively to the 2013 ASCE Southeast Student Conference. The event made use of the state-of-the-art 12-fan WOW hurricane simulator to familiarize students with the basics of wind hazard mitigation. Each competing student team was tasked with creating a mitigation solution to improve a building's aerodynamic performance. Student-designed solutions were tested on their ability to prevent gravel on structures' roofs from being blown away by hurricane-force winds.

The victor of the Wall of Wind challenge also turned out to be the big winner overall: the University of Puerto Rico – Mayaguez, whose team was honored with a trophy at the closing awards ceremony on Saturday, March 16 at Jungle Island. For the full conference rankings, go to www.cee.fiu.edu.

Congratulations to the University of Puerto Rico Mayaguez on a big win at the largest ASCE student conference. We thank the FIU-ASCE student chapter for your excellent work planning, organizing and executing such a huge, successful event in partnership with the University of Miami ASCE chapter. ■



The Lehman Center ‘Drives’ Transportation Change Through Research

FIU researchers implement advanced transportation systems throughout Florida

Miami-Dade County, the home of Florida International University, has a population of approximately 2.56 million people and plays host to around 12 million visitors every year. And most of the time, when you’re driving here, it feels like all of those people are driving on the same highway that you are.

As such, this popular, populous region is a perfect home for FIU’s Lehman Center for Transportation Research (LCTR), which has been conducting research and training to improve transportation mobility and safety since its inception in 1993.

The Lehman Center was named for the late Congressman Bill Lehman, an influential elected official who brought billions of dollars of federal aid, especially in the area of transportation, to South Florida during his twenty years in the U.S. House of Representatives. In honor of Lehman’s efforts to make South Florida a better place, the LCTR’s researchers are educating a multidisciplinary workforce to plan, manage, and implement advanced transportation systems.

The Lehman Center, located in the FIU Department of Civil & Environmental Engineering and staffed with CEE faculty and researchers, is the only transportation center

of its kind in South Florida. The LCTR conducts projects in many areas of transportation, including geographic information systems (GIS), transportation demand modeling, land use planning, intelligent transportation systems (ITS), transportation safety, traffic operation and control, public transportation, traffic simulation and transportation databases.

The FIU Civil & Environmental Engineering department takes great pride in the Lehman Center and has a major commitment to transportation engineering education and research, employing the largest university transportation faculty group in the state of Florida. The LCTR staffs more than 20 full-time FIU researchers and over 20 graduate and undergraduate research assistants. Its educational program is currently the largest in the state of Florida – and one of the largest in the nation – with over 40 graduate students enrolled.

Students involved with the Lehman Center are given ample opportunities to succeed, and their accomplishments have helped the transportation engineering program at FIU to achieve an international reputation for excellence. The Institute of Transportation Engineers (ITE) Student Chapter at FIU won the international honor of “best student chapter” in 2001, 2004, 2005, 2007 and 2008. The ITE has also bestowed four Daniel B. Fambro Student Paper Awards to FIU ITE Student Chapter members over the past 13 years (2000, 2004, 2005, 2010) – more than they’ve awarded to those of any other university in the world.

Students and faculty in the LCTR have access to world-class facilities, including the Integrated Intelligent Transportation Systems (IITS) Laboratory – one of the most advanced labs of its kind in the

nation. The IITS Lab has real-time communication capabilities that enable the sharing of videos and data between the lab and various traffic management centers. The IITS Lab provides graduate and undergraduate students with the tools to conduct advanced ITS operation research.

The Driving Simulation Lab, a premier center dedicated to driver safety, was developed through collaboration between FIU's Colleges of Engineering & Computing and Nursing & Health Sciences. The only facility of its kind in South Florida, the Driving Simulation Lab houses a STISIM Drive Model 400 with Car Conversion Kit – an interactive, high-fidelity driving simulator equipped with steering, pedals, and a 135-degree driver field-of-view – which provides a realistic setting for sophisticated, multidisciplinary transportation research.

Lehman Center researchers also support and manage the Florida Advanced Public Transportation Systems Program (APTS) on behalf of the Florida Department of Transportation (FDOT). Florida APTS is working to implement new technologies, known as "Intelligent Transportation Systems;" in public transit operations throughout the state. LCTR is also Florida's leading center for the development of innovative, computer-based systems for transportation engineering applications, including the Crash Reduction Analysis System Hub (CRASH), Florida Traffic Safety web portal, and the Florida Highways Information System.

Along with Rutgers University, FIU is one of only two universities with membership in all three University Transportation Center (UTC) categories. The Lehman Center belongs to a Tier I UTC led by Georgia Institute of Technology, a Regional UTC led by the University of Florida, and a Tier I-Transit UTC led by the University of



The high-fidelity Driving Simulation Lab at FIU.

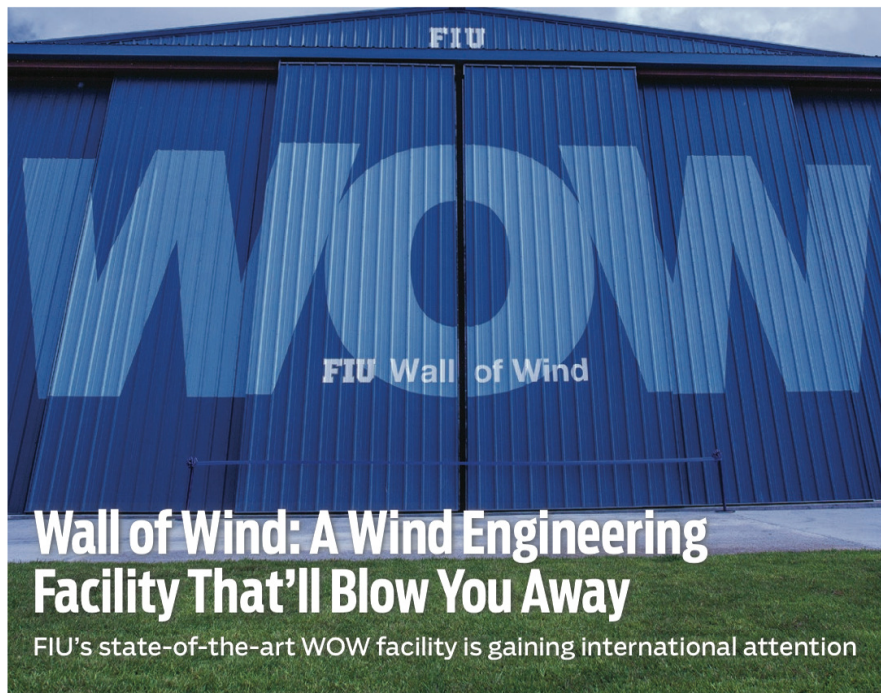


The Integrated Intelligent Transportation Systems Laboratory (IITS) of the Lehman Center for Transportation Research.

South Florida – all of which received UTC grant funding from the U.S. Department of Transportation's Research and Innovative Technology Administration in January of 2012. FIU professors **Drs. Albert Gan, Mohammad Hadi** and **Fabian Cevallos** lead FIU's participation at the three centers.

In close collaboration with FDOT, the Transportation Research Board, and the

FIU Applied Research Center, the Lehman Center for is making a major impact on the future of transportation infrastructure. Through a wealth of active research projects, LCTR researchers are working toward making Florida's roads and rails more efficient, safe, and technologically sophisticated – critical initiatives in such a high-traffic, high-population state. ■



Wall of Wind: A Wind Engineering Facility That'll Blow You Away

FIU's state-of-the-art WOW facility is gaining international attention

In 1992, Hurricane Andrew hit South Florida and wreaked havoc on structures around the region, causing an estimated \$26 billion in damage. Andrew is one of only three storms to ever make landfall on the U.S. as a maximum-intensity "Category 5" hurricane – but won't be the last.

To better prepare engineers for the next CAT-5 hurricane, researchers from the Department of Civil & Environmental Engineering and the International Hurricane Research Center (IHRC) at Florida International University created a research and testing facility that can

simulate the weather effects incurred by an Andrew- or Katrina-level hurricane: the Wall of Wind.

The Wall of Wind or "WOW" is a state-of-the-art machine – the largest and most powerful university facility of its kind – that researchers are using to conduct advanced wind testing in support of safer, more hurricane-ready communities. The 15-foot tall Wall is made up of 12 giant fans that can generate wind speeds up to 157 miles per hour using a total of 8400 horsepower. The electric fan-motor units are controlled by two variable frequency

drives.

By recreating the wind and wind-driven rain of a hurricane, FIU CEE's and IHRC's team of expert engineers are learning whether today's construction materials and building designs are sufficient to withstand the kinds of forces Andrew inflicted on Florida two decades ago. This will help in developing better design and retrofitting techniques.

"This facility in many ways is part of the Andrew legacy," said **Dr. Arindam Chowdhury**, Associate Professor of CEE and Director of the Laboratory for Wind

Engineering Research at the IHRC. "Here we come very close to recreating Andrew in a controlled environment so that we can help mitigate damage in our community and in all those communities in the path of hurricanes in the U.S. and around the world."

The WOW was featured widely by national media outlets in conjunction with the twentieth anniversary of Hurricane Andrew in August of 2012. You may have seen the WOW facility in reports from the *Huffington Post*, *Daily Mail* or *Atlantic Cities*; on reports from CNN, ABC, NBC, CBS, MSNBC, PBS or Univision; or in other local, national and international coverage.

The WOW, a collaborative project of FIU IHRC and CEE, has been supported by the State of Florida Division of Emergency Management, the U.S. Department of Energy, Renaissance Reinsurance, the Roof Alliance Industry, and the National Science Foundation, who recently honored Dr. Chowdhury with the NSF CAREER Award to further fund his hurricane wind effect research.

The WOW facility has existed, in various forms, since 2005, when it originated as a 2-fan structure. The research being

conducted by WOW researchers has been making an impact ever since: Recommendations based on WOW research from Dr. Chowdhury influenced important changes to the 2010 Florida Building code, which decreased the vulnerability of roofs and rooftop equipment.

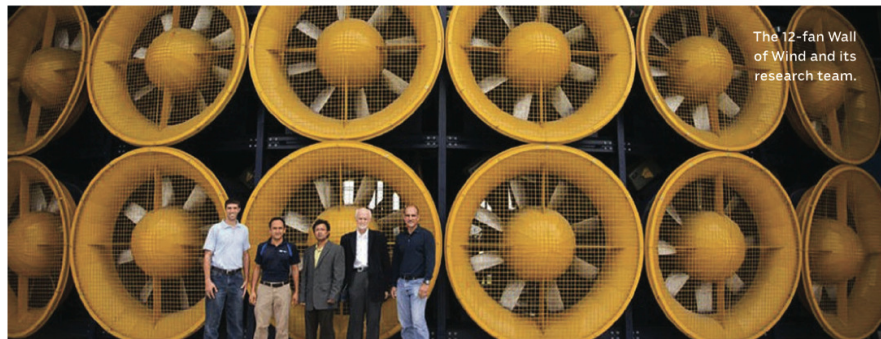
"Here we come very close to recreating Andrew in a controlled environment so that we can help mitigate damage in our community and in all those communities in the path of hurricanes."

—Dr. Arindam Chowdhury

The WOW research team recently gained a valuable asset when **Dr. Peter Irwin** came aboard the FIU CEE faculty. Dr. Irwin is recognized as one of the top wind consultants in the world regarding the design of large structures and has acted as a consultant on the Burj Khalifa (the world's tallest building), Taipei 101, and Petronas

Towers, among many other tall building, stadium, and long-span bridge projects. He is the inventor of the Irwin Sensor for measuring Pedestrian Level Winds in wind tunnels, which is widely used in wind tunnel laboratories, and has won a multitude of prestigious awards including the American Society of Civil Engineers' Jack E. Cermak Medal. Dr. Irwin works at the WOW alongside two other recent additions to the FIU CEE faculty: **Dr. Emil Simiu**, a fellow of the National Institute of Standards and Technology for windstorm impact reduction; and **Dr. Ioannis Zisis**, a researcher who has been studying the effects of wind on the built environment for over eight years.

Through the multidisciplinary projects being conducted at the WOW, FIU CEE faculty members and their IHRC colleagues are working to safeguard people, property and the environment from the effects of hurricanes of various strengths. By helping communities assess their vulnerabilities and become better prepared for natural disasters, the WOW may prove as influential to wind engineering research as crash testing has been to the automobile industry. ■



The 12-fan Wall of Wind and its research team.

Solving the 'Bridge Problem'

**FIU's Bridge
Engineering
Program Leads
the Nation in
Design for
Service Life**

The existing
Tappan Zee Bridge
in New York

A significant portion of the existing U.S. roadway system was built over 50 years ago and is showing signs of increasing deterioration. Motorists across the nation are demanding an improved and sustainable transportation system, and FIU's bridge engineering researchers are working hard to help the transportation sector meet that challenge. The magnitude of the infrastructure problem was recently quantified in a report by the University Transportation Center for Mobility, which found that highway delays cost the nation more than \$100 billion annually.

That excess traffic demand is not

limited to major metropolitan areas; many rural interstates suffer the same fate as metropolitan ones, with traffic volumes exceeding the existing capacity for large portions of each day.

Over the 30-year period between 1975 and 2005, there were significant increases in the demands on the U.S. transportation system. The population, number of drivers, number of vehicles, miles traveled, and total weight carried have increased by 32, 63, 90, 132 and 400 percent, respectively, but the miles of roadway have increased by only 6 percent. Not only were most U.S. roadways designed to carry far less traffic than they

do today, but the increase in demand has been so great that considerable portions of the roadway system are now operating at or above capacity for much of every day.

Conventional construction practices have not adequately addressed the magnitude of the infrastructure problem facing the nation. For example, in 2003, one of every five miles of the nation's highway system was constricted by a work zone — inconveniencing drivers and costing states money. The National Bridge Inventory (NBI) indicates that about 25 percent of the nation's more than 600,000 highway bridges are classified as substandard, with

almost 90,000 of these bridges classified as functionally obsolete. Further, even though most bridges in use today were designed for a 50-year service life, the average age of a bridge in this nation is 45 years. Almost a third of existing bridges have already exceeded their design life.

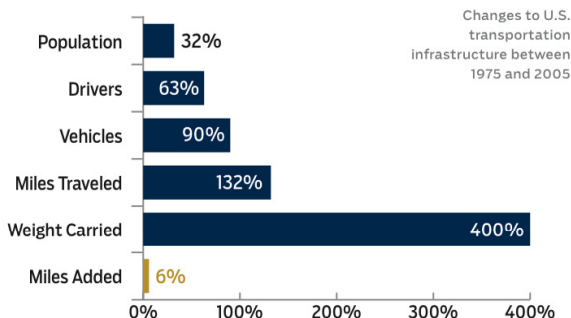
FIU's bridge engineering program is addressing multiple critical issues related to bridge engineering as part of a larger effort to improve the tools available to solve the U.S. infrastructure problem.

ADVANCING ABC: ACCELERATED BRIDGE CONSTRUCTION

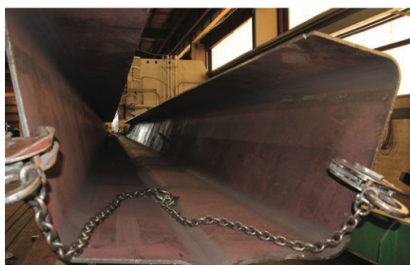
The establishment of the Center for Accelerated Bridge Construction (ABC Center) at FIU (www.abc.fiu.edu) has greatly benefited the bridge engineering profession by providing a focal point for technology transfer and the development of new and advanced technologies. Monthly webinars hosted by FIU's ABC Center are, on average, attracting more than 4,000 bridge professionals from around the world.

The development of advanced bridge systems, such as second generation folded plate girder systems, is at the core of FIU's ABC Center activities.

The ABC Center is also providing national leadership in its sector by bringing the bridge industry together and assisting in the development of strategic plans. During the second annual meeting of the ABC Center, which was held on December 7, 2012 at FIU, representatives from the Federal Highway Administration (FHWA), American Association of State Highway and Transportation Officials (AASHTO), multiple state departments of transportation (DOTs), local agencies, industries and academia gathered and further developed a national strategic plan for the implementation of ABC methods and practices across the country.



ABOVE: A bridge with "fracture critical" elements



LEFT: A folded plate girder

DESIGN OF BRIDGES FOR SERVICE LIFE

Additionally, FIU researchers – through funding provided by the Transportation Research Board (TRB) of the National Academy of Engineering – are in the final steps of completing Project R19A of the Second Strategic Highway Research Program (SHRP2): “Bridges for Service Life Beyond 100 Years: Innovative Systems, Subsystems and Components.” A major product of Project R19A is the development of the first and most comprehensive document worldwide devoted to service life of bridges – the 11-chapter “Design Guide for Bridges for Service Life.”

The principals and philosophy in “The Guide” were reviewed by New York DOT and New York Thruway authorities and recommended to contractors bidding on the new construction project of the famous Tappan Zee Bridge in New York as a reference.

STEEL BRIDGES

Presently, FIU bridge engineering researchers are working closely with engineers from the Florida Department of Transportation (FDOT) – one of the most advanced Departments of Transportation in the nation – to address some of the major bridge engineering problems in the state.

In the area of steel bridges, FIU researchers are working closely with the FDOT Bridge Division and representatives of the steel industry to conduct major investigations that include developing new design and analysis procedures for cross frames in skewed and curved steel bridges and in bridges constructed using phasing. Owners, designers, contractors, fabricators and erectors have, for years, struggled with the construction of heavily skewed steel bridges – often, job delays result from a lack of understanding of the problems

and poor communication among the parties involved. This research study at FIU, in collaboration with FDOT bridge engineers, is resulting in a set of recommendations that should put this challenge to rest.

A costly maintenance problem facing all DOTs is the inspection of steel bridges that have “fracture critical” elements. For example, the inspection of two-steel box girder bridges, which are used across the nation, currently costs several times more than the inspection of other bridge types. Researchers at FIU are developing methods and tools that will allow FDOT engineers to remove a significant number of two-steel box girder bridges from the “fracture critical” list – saving inspection money for tax payers in Florida and the rest of the nation.

SEGMENTAL CONCRETE BRIDGES

A team of FIU researchers is carrying out a project on the use of fiber reinforced polymer (FRP) composite cable for post-tensioning applications in segmental concrete bridges. Given the potential corrosion of post-tensioned steel strands, FRP may provide a viable alternative for post-tensioning applications. An objective of the research is to assess the use of corrosion-resistant and lightweight carbon fiber reinforced polymer (CFRP) in segmental bridges. The research includes constructing and testing of a one-third scale of a segmental bridge at the FIU Titan America Structures and Construction Testing Laboratory.

ADVANCED MATERIALS AND BEHAVIOR

During the last several years, a team of researchers at FIU has led some major studies on the use of ultra-high-performance concrete (UHPC). This advanced type of concrete has a compressive

Through these unique projects and an ongoing commitment to infrastructure improvement research, FIU's bridge engineering program is making a cutting-edge impact on the bridge engineering profession.



A novel ultra-high performance (UHPC)-high-strength steel (HSS) lightweight bridge deck system under testing

strength of over 20,000 psi. The most remarkable achievements of these studies include a novel hybrid steel-free column made of UHPC and FRP which has higher earthquake resistance as compared to conventional reinforced concrete columns; the development of the first confinement model for UHPC materials; and a novel bridge deck system made of UHPC and high-strength steel reinforcement, which is a viable alternative to open grid steel decks for movable bridges.

FIU CEE is also addressing major challenges in civil infrastructure durability, as department researchers are engaged in challenging investigations regarding engineering materials and corrosion durability. Examples include corrosion durability of reinforced concrete bridges in marine environments (including performance of concrete and corrosion resistant reinforcing materials), corrosion resistant coatings, and durability life modeling. Researchers are also actively engaged with the challenges to segmental bridge tendon durability. Recent studies have focused on corrosion of post-tensioned tendons with deficient grout materials and corrosion of tendons after repair with dissimilar grout materials.

NON-DESTRUCTIVE TESTING

Sustained, systematic analysis and maintenance of our highway network and its roads and bridges is of crucial importance. An important prerequisite for sustainable and secure buildings and infrastructures is a reliable building diagnostics, which combines methods like non-destructive testing (NDT), structural health monitoring (SHM) and analytical tools like data reconstruction techniques or finite element simulations (FEM) with



A segmental concrete bridge under construction at the 826/836 interchange in Miami

the actual procedures in civil and structural engineering. Developing state of the art technologies and methodologies in NDT is fast becoming one of most active research areas for FIU bridge engineers.

Under a project funded by FDOT, researchers at FIU have developed a tentative roadmap for inspection of bridges with post tensioning steel strands. Under this project, a potential procedure was developed to select the most appropriate non-destructive testing methods for corrosion inspection.

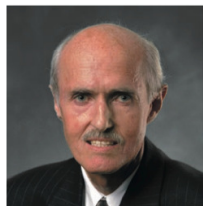
Through these unique projects and an ongoing commitment to infrastructure improvement research, FIU's bridge engineering program is making a cutting-edge impact on the bridge engineering profession. Continuing work will help make America's roads and bridges more safe, secure and cost-efficient. ■



Ultrasonic data collection by an FIU researcher active in conducting non-destructive testing

FIU CEE Expands With Ten Recent Hires

The Department of Civil & Environmental Engineering at Florida International University is pleased to announce the appointment of ten professors to the faculty in 2012.



■ **Peter Irwin**, Ph.D., a renowned wind engineering expert and consultant, has joined the faculty as Professor of Practice for the Wall of Wind. Dr. Irwin, an international authority on the effects of high winds on large structures, has done wind consulting for some of the most ambitious building projects on record, including three structures to have held the honor of "world's tallest building."



■ **Michael Bienvenu** Ph.D., P.E. has been appointed the Karl Watson, Jr. Professor of Practice in Concrete Pavement Sustainability. The position is a unique public/private partnership between FIU and Florida Concrete and Products Association. Dr. Bienvenu is both an accomplished academic and an experienced engineering practitioner who has held leadership roles in both construction services and transportation sectors.



■ **Hesham Ali**, Ph.D., P.E., CPM has been appointed as Green Paving Professor of Practice. Dr. Ali has twenty-one years of civil engineering experience, mostly in pavement design, analysis and construction. Dr. Ali is helping the new Green Paving Initiative at FIU, which is working to promote the use and expansion of Green Paving methods across Florida and the rest of the U.S.



■ **Kingsley Lau**, Ph.D. has joined the department as Assistant Professor of Structural Engineering. Prior to joining FIU, he served as Corrosion Research Scientist at the Florida Department of Transportation State Materials Office. Dr. Lau's research focuses on the corrosion of engineering materials and the durability of reinforced concrete and prestressed concrete.



■ **Ioannis Zisis**, Ph.D. joined the department from Concordia University as Assistant Professor of Structural Engineering. Dr. Zisis has spent over eight years studying wind's effects on the built environment and his research focuses on structural wind engineering. He is working, along with other researchers, at FIU's state-of-the-art Wall of Wind facility.



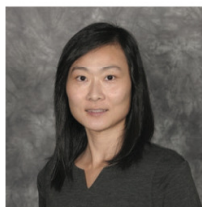
■ **Lakshmi N. Reddi** has joined the department, and the university, as Professor and Dean of the University Graduate School. He provides leadership over all aspects of graduate education at Florida International University and, among many other achievements, has established fruitful collaborations with researchers from such diverse disciplines as Architecture, Biology, Chemistry, Computer Science, Physics, and Biomedical Engineering.



■ **Ralf Arndt**, Dr. -Ing., has joined the department from Rutgers University as Assistant Professor of Structural Engineering. His research is focused on developing and adapting non-destructive testing (NDT) technologies for the inspection of aging infrastructure. Dr. Arndt has contributed extensively to the field of active thermography in civil engineering and in utilizing periodic multi-sensor NDT for the structural health monitoring of reinforced concrete structures.



■ **Omar I. Abdul-Aziz**, Ph.D., has been appointed as Assistant Professor of Ecological and Water Resources Engineering. Dr. Abdul-Aziz's research is highly interdisciplinary, incorporating topics related to the coupled human-natural systems and sustainability sciences and engineering from at-site to regional to global scales. Prior to joining FIU CEE, he was Research Scientist at the USGS Earth Resources Observation and Science Center.



■ **Xia Jin**, Ph.D., AICP, has joined the department as Assistant Professor of Transportation Engineering. Recognizing the interactions between transportation and land use, Dr. Jin's research focuses on integrated urban models in accounting for the connections between transportation and economic, environmental and social objectives. Previously, Dr. Jin worked for the New York Metropolitan Transportation Council.



■ **Dr. Emil Simiu** is a Distinguished Research Professor for FIU's International Hurricane Research Center and Fellow in the National Windstorm Impact Reduction Program of the Engineering Laboratory at the National Institute of Standards and Technology. Dr. Simiu's research activities have included the estimation of wind and wave effects on buildings, bridges and deep-water compliant offshore platforms.

FIU CEE Hosts Visiting Scholar Dr. Eugene J. O'Brien

Eugene J. O'Brien, Ph.D., is spending the spring 2013 semester in the Department of Civil & Environmental Engineering at FIU as part of his sabbatical. He is conducting bridge engineering research with department chair Dr. Aitor Azizinamini.

Dr. O'Brien is Professor of Civil Engineering at the University College of Dublin in Dublin, Ireland and is the former Founding President of the International Society for Weigh In Motion. ■



Awards & Recognition



CHOWDHURY LAUDED WITH MULTITUDE OF HONORS

**Dr. Arindam
Chowdhury,**
Associate
Professor in

Wind Engineering at FIU CEE and Director of the Laboratory for Wind Engineering Research at FIU's International Hurricane Research Center, closed out a banner year in December. Not only did 2012 see Dr. Chowdhury's state-of-the-art facility, the Wall of Wind, earn international media attention, but over the course of twelve months he was honored with five notable awards for his acclaimed research and excellent service to FIU.

In March, Dr. Chowdhury was granted a Faculty Early Career Development Program (CAREER) Award from the National Science Foundation, the most prestigious honor the NSF bestows on junior faculty. The award, which honors professors and researchers who demonstrate outstanding research, excellent education, and the integration of education and research within the context of the mission of their organizations, will fund Dr. Chowdhury's research on the effects of hurricane winds on buildings and structures.

The following month, Dr. Chowdhury was named a "Top Scholar" by FIU President **Mark Rosenberg**, an achievement that recognizes world-class research and scholarship among the FIU academic community.

Dr. Chowdhury received another top honor from FIU on September 27, when

he received the President's Council Worlds Ahead Faculty Award, the university's highest recognition for faculty members. Along with his trophy, Dr. Chowdhury received a \$12,500 award.

October saw Dr. Chowdhury win the Florida Sea Grant Research to Application Award, bestowed at the inaugural Coastal Science Symposium at the University of Florida. Florida Sea Grant supports research, education and extension to conserve coastal resources and enhance economic opportunities for the people of Florida. Its council honored Dr. Chowdhury for research that has identified innovative and practical ways to improve the structural integrity of homes and other buildings, thereby ensuring greater protection of future generations of Floridians from hurricanes and tropical storms.

Lastly, in November, Dr. Chowdhury was again recognized by FIU, this time with a Service and Recognition Award.



GAN NAMED TOP SCHOLAR, FACULTY AWARD WINNER

Dr. Albert Gan,
a CEE Associate

Professor since 1999 and a leading researcher in the Lehman Center for Transportation Research, was lauded with two honors from FIU – specifically by president Mark B. Rosenberg and the faculty senate – in 2012. Dr. Gan received both Top Scholar recognition and the Faculty Award for Excellence in Research and Creative Activities.

Both awards recognized Dr. Gan's

state-of-the-art transportation research in highway safety, traffic simulation, ITS, GIS, transit planning, and demand modeling. In addition to his research, Dr. Gan has been helping lead FIU's participation in three University Transportation Centers.



DEPARTMENT CHAIR RECEIVES AISC SPECIAL ACHIEVEMENT AWARD

The American Institute of Steel Construction (AISC) honored **Dr. Atozand Azizinamini**, Chair of the Civil & Environmental Engineering Department at FIU and head of the Center for Accelerated Bridge Construction (ABC) at FIU, with the 2011 Special Achievement award. The honor was awarded at NASCC: The Steel Conference in Pittsburgh in May of 2011.

A Special Achievement Award provides recognition to individuals who demonstrate notable achievements in structural steel design, construction, research or education and who have made positive, substantial impacts on the structural steel design and construction industry. Dr. Azizinamini was honored for his development of a folded plate steel bridge system for short-span bridges.



**DR. HADI NAMED 2011 ITS
PROFESSIONAL OF THE YEAR,
2012 FIU CEC MENTOR OF THE YEAR**

ITS Florida, a state chapter of the Intelligent Transportation Society of America, named **Dr. Mohammed Hadi** the 2011 ITS Professional of the Year. Dr. Hadi is Associate Professor of Transportation Engineering at FIU and is a key researcher in the Lehman Center for Transportation Research.

The ITS Professional of the Year Award recognizes those who make strong contributions to the ITS (intelligent transportation systems) community and mission of ITS Florida. Dr. Hadi has not only created the ITS Program at FIU but has led the development of various ITS planning and operations tools for the Florida Department of Transportation, among other accomplishments in his field.

More recently, Dr. Hadi was lauded by the FIU College of Engineering & Computing as the winner of the 2012 Mentorship Award. The honor was bestowed as part of the Faculty Council for Governance's CEC Outstanding Faculty Awards.

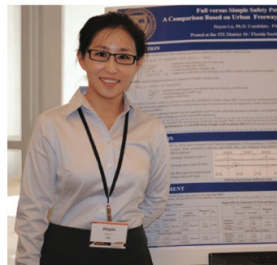


**TRANSPORTATION STUDENTS
SHINE AT TRANSPO 2012**

"Transpo" is a conference and exhibition held every October by the Intelligent Transportation Society of Florida (ITS Florida), which is attended by academics, professional transportation engineers, and transportation students from around the state. This year, Transpo 2012 was jointly organized by ITS Florida and the Institute of Transportation Engineers (ITE), who used it as an opportunity to host their ITE District 10 Awards Banquet in conjunction with the ITS Florida Awards.

In addition to honoring a wealth of transportation professionals during the awards ceremony, ITE and ITS Florida bestowed a total of five awards to Florida transportation students or student organizations. Four of those five awards went to transportation students from FIU.

The FIU ITE Student Chapter was named Best Florida Chapter, continuing its winning tradition. Eileen Cabrera, a graduate student pursuing her Master's



Jinyan Lu, a doctoral student in transportation engineering, who won two major awards at Transpo 2012.

Degree on assistantship with Dr. Mohammed Hadi, won the 2012 ITS Florida Scholarship. Jinyan Lu, a doctoral student studying under Dr. Albert Gan, was named the recipient of the 2012 William "Bill" McGrath Student Scholarship and the winner of the Henry P. Boggs Student Paper Award, and her student poster came in second place in the overall Student Poster competition. ■



Emma V. Lopez, MS Env. '12, Lands Prestigious Fellowship

Recent graduate's accomplishments featured in *LatinaStyle* magazine

Emma Violeta Lopez, a Miami native and FIU Civil & Environmental Engineering Department alumna, is currently serving in Washington, D.C. as a 2012-2013 Graduate STEM Fellow of the Congressional Hispanic Caucus Institute (CHCI). Emma earned her fellowship after an impressive undergraduate and graduate career at FIU.

Emma's accomplishments are earning her plenty of attention, and not just on Capitol Hill: She was recently featured in the February 2013 issue of *LATINA Style* Magazine, a nationally circulated publication that showcases Latina achievements

in business, science, civic affairs, education, entertainment, sports, and the arts. An article Emma wrote about the experiences that led to her selection by CHCI was published in the magazine's "College Beat" section. (Go to LATINASTyle.com/magazine to read the story.)

In her piece, Emma describes how her upbringing influenced the importance of education in her life and details how she earned a scholarship to FIU through her participation in the Partnership in Academic Communities (PAC) program, a unique collaborative partnership between FIU and Miami-Dade County Public

Schools.

Emma also explains how she discovered her passion for environmentalism and pursued it with an Environmental Engineering degree. A research service project she performed as an undergraduate, in which she designed and constructed rainwater collection and storage systems to provide clean drinking water to rural areas in the Peruvian Amazon, crystallized Emma's goals of bringing drinkable water to communities and cleaning up pollution.

Emma, who graduated in December 2010 with a B.S. in Environmental Engineering and went on to earn her M.S. in May 2012, credits FIU CEE's Environmental Engineering faculty members for having a strong impact on her success.

"The Department of Civil & Environmental Engineering at FIU offered a friendly and welcoming environment to learn and fostered in me a desire to make a difference for those my work will impact, the natural environment, and communities of people," says Emma. "My professors have always been supportive of my academic and professional endeavors when attending professional conferences, traveling to other countries, or applying to scholarships and fellowship programs. I am very thankful for the department's support."

As a CHCI Graduate STEM Fellow, Emma is working with the National Science Foundation and the Office of Congresswoman Eddie Bernice Johnson to enhance her leadership skills and gain knowledge about policy-making. Additionally, Emma was recently accepted to the doctoral program in Environmental Engineering at the University of South Florida. She will begin pursuing her Ph.D., with a focus on sustainable development, in the fall. ■



Richard Blanco reciting *One Today*, the original poem he wrote for President Obama's second inauguration.

an alum achieve success in the arts – and incredibly special to see one be recognized on a national stage.

Richard Blanco, the inaugural poet for President Obama's second inauguration on January 21, 2013, earned his Bachelor's degree in Civil Engineering from FIU in 1991. Though that was over twenty years ago, Blanco remains fresh in the memories of the FIU CEE faculty; Drs. Ton-Lo Wang and L. David Shen remember Blanco as a very good student. Blanco also went on to receive a second degree from FIU years later: a master's in creative writing.

Blanco's selection as inaugural poet is remarkable for many reasons. He is only the third individual to ever be selected as an inaugural poet, joining the ranks of American masters Robert Frost and Maya Angelou on a very short list. Blanco is also the first Hispanic and gay inaugural poet and, of course, the first FIU alumnus.

Congratulations, Richard Blanco, on a momentous accomplishment from your colleagues in FIU CEE! We are very proud of you. ■

In the Civil & Environmental Engineering Department of Florida International University, we're well accustomed to seeing our graduates pursue successful careers in the governmental and private sectors, making contributions in areas such as transportation, structural engineering, water resources, environmental engineering, research and development, or academia, among a wealth of other sectors. But it's unique for us to see

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