

blueprint

FALL 2011



STRENGTHENING NUCLEAR POWER INFRASTRUCTURE

- CEE WELCOMES FOUR
NEW FACULTY
- PROFESSOR OSMAN GHAZZALY
RETIRES
- CEE SALUTES TWO
ACADEMY MEMBERS

contents

- 3 Department News
- 4 Research News
- 6 Faculty News
- 9 Student Profile
- 10 Alumni News

blueprint

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Chair's Message



Abdeldjelil "DJ" Belarbi

Chair, Dept. of Civil and Environmental Engineering

Dear CEE Alumni and Friends,

Welcome to the Fall edition of *blueprint*. The Civil and Environmental Engineering (CEE) Department continues to develop into a more phenomenal group of faculty and staff, and our department growth path and goals will remain the same despite economic drawbacks.

Since the spring, the department has grown again with four new junior faculty to whom you'll be introduced in this issue. Our department growth is tremendous. Every office is filled, and every lab is in constant use. We continue to improve our facilities and update our undergraduate and graduate curricula. As the department strives for higher standards for educating our students, CEE is hosting a workshop modeled after the exclusive ASCE ExCEED program for all junior engineering faculty.

Research expenditures increased by at least 25 percent, and the department received more than \$7 million in new grants and projects. Unfortunately, we will also be saying goodbye to Dr. Osman Ghazzaly, who will be retiring January 2012.

As you may know, we instituted a new Academy of Distinguished Civil & Environmental Engineers. Their new leadership is working to recommend and induct more members in Spring 2012.

Our student organizations continue to be active. ASCE will be hosting the annual steel bridge competition at UH in 2012. ACI members are competing nationally and internationally and bringing home trophies. EWB continues working with low income families across central America and educating local residents on how to build and sustain a good quality life. The generosity of our friends and alumni helped our students achieve their goals and dreams through scholarships and support of the student organizations.

It is my honor to continue serving as the chair of this exceptional department, and I sincerely look forward to being part of our ongoing success and accomplishments. We are always happy to hear and share updates from you, and we appreciate your support.

CEE Charts its History

Associate Professor Jerry Rogers is currently compiling a history of the department titled "Bridging the Years: the Department of Civil and Environmental Engineering of the University of Houston." The book is patterned after the "Missouri University of Science and Technology Civil Engineering History Book." The UH CEE book will feature the following chapters:

1. *The Early Years: General Engineering to Civil Engineering, 1941-1966*
2. *The White Department of Civil Engineering Years, 1966-1976*
3. *The Pincus, Hsu, and O'Neill Civil Engineering Research Years, 1976-1985*
4. *The Symons Years and Department of Civil and Environmental Engineering, 1985-89*
5. *The O'Neill Civil Engineering Foundation Years, 1989-1993*
6. *The Mau and Clifford Growth Years, 1993-2000*
7. *The Vipulanandan Development Years, 2001-2009*
8. *The Belarbi Civil and Environmental Engineering Expansion Years, 2009-present*

Professor Rogers is looking for photographs of student competitions for use in the CEE history book. Specifically, he is interested in photographs from alumni of student competitions, first place awards, names of winning concrete canoes, bridges and team captains. If you have any photos or information to contribute, please send one or two of your scanned photos with date, event and names to rogers.jerry@att.net.

Steel Bridge Competition

The University of Houston ASCE student chapter will host the Texas-Mexico Regional Steel Bridge Competition on January 14, 2012 at the Pasadena Convention Center. Thirteen schools in Texas and six schools in Mexico are invited to compete in the conception and design of a steel structure that meets specifications and emphasizes performance and economy.

By competing, civil engineering students strengthen their teamwork and project management skills in the application of real-world engineering issues such as spatial constraints, material properties, strength, serviceability, fabrication, safety, aesthetics, and cost.

This year's competition committee includes civil engineering students Kim Pham (chair), Julio Villalta, Khanh Bui, Kevin Odom, Jonathan Tran and Kristen Torbett.



ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Strengthening Nuclear Power Infrastructure

by Toby Weber

Houston may traditionally be an oil town, but that's not all it is. For decades, researchers in the University of Houston's Department of Civil and Environmental Engineering (CEE) have been leaders in the area of nuclear power plant infrastructure.

"Investigators in CEE department have made incredibly important contributions to our understanding of structural materials and design. By conducting research, publishing their findings and organizing international conferences, they are now leading efforts to develop the design procedures for the safest, most resilient nuclear energy infrastructure," said Abdeldjelil "DJ" Belarbi, Hugh Roy and Lillie Cranz Cullen Professor and chair of the department.

Much of this work began with Thomas Hsu, Moores Professor of Civil Engineering, who in the mid 1980s designed and built what remains the world's most advanced tool for testing reinforced concrete panels, the Universal Element Tester. Weighing in at more than 80,000 lbs., the machine can exert up to 1,000 tons of pressure in each of four different directions. Thanks to a sophisticated electronic control program, it can apply practically any type of load, including compression, tension, shear and their combinations.

Through his work on the UET, Hsu has become one of the world's leading authorities on the behavior of concrete and, by extension, how to build a nuclear plant. Just one year ago, in fact, he and fellow UH Civil Engineering Professor Yi-Lung Mo published the book "Unified Theory of Concrete Structures," which synthesized roughly 25 years of two- and three dimensional concrete panel research.

That book, and the decades of research and service it represents, has made Hsu a pillar of the reinforced concrete research community. Last year, he put this authority to good use by organizing and chairing the International Workshop on Infrastructure Systems for Nuclear Energy.

Working with investigators at the National Center for Research on Earthquake Engineering, he is now using the conference presentations as the basis for a book on nuclear plant infrastructure. "When it comes out [this spring] it will be the most up-to-date, advanced guide for building infrastructure of nuclear power plants," Hsu said.

Hsu isn't the only civil engineering professor who is an authority on nuclear power plant infrastructure.

The department is also home to Kaspar Willam, Distinguished Cullen Professor of Engineering, and Associate Professor Ashraf Ayoub. The two are combining their expertise to conduct "multiscale" research that integrates the most up-to-date findings on material properties into computer models of various types of structures, including planned studies of nuclear power plants.

Willam, a member of the National Academy of Engineering, is an internationally-recognized authority on concrete behavior. Much of his research involves using computer models to determine the multi-axial material properties of concrete under different environmental and mechanical effects.

His earlier work includes explorations of how concrete performs under rapid heating and drying, an effect very much in play at nuclear power plants. In 2009 he and his collaborators published a 200-plus page report outlining their research into concrete spalling, a phenomenon where the surface of concrete basically explodes under rapid heating.

More recently, Willam has received funding from Oak Ridge National Laboratory to review the effects of high nuclear radiation levels on concrete — information that should help provide a starting point for future projects.

This is where Ayoub comes in. A researcher whose areas of expertise include structural modeling, his goal is to integrate Willam's findings on concrete properties into

global structural models, which makes these analyses even more realistic and compelling. He plans to build multiple models of nuclear power plants. Through computer simulation he will expose these plants to the previously mentioned stresses due to temperature and radiation, as well as hazards such as earthquakes, wind and man-made impact.

By comparing how these structures react to these loads and stresses, Ayoub and Willam should be able to help develop new multiscale modeling techniques for nuclear plants.

Yi-Lung Mo, a long-time collaborator of Hsu, is also a major contributor to the department's nuclear power infrastructure efforts. He is currently developing a new type of base isolation system/foundation that should cause seismic waves to literally bounce harmlessly off a structure.

This system starts with a cylinder of solid steel that is enclosed in a layer of rubber. The two are then surrounded by concrete. That combination is then repeated to form the whole of a structure's foundation.

The result is a base isolation system/foundation with a distinct frequency bandgap. This bandgap is essentially a frequency range; seismic waves that fall within that range literally bounce back to their source.

Mo's goal is to design a system with a bandgap of between 0.5 hertz and 10 hertz — a range that includes almost all earthquakes, regardless of their actual magnitude.

Mo has already produced mathematical models that show the viability of this system. In August, he won a \$538,000 grant from the U.S. Department of Energy's Nuclear Energy University Program to build and test scale models of this new system. He is partnering with researchers at The University of Texas who have access to mobile field shakers, as well as researchers at Prairie View A&M University and Argonne National Laboratory.

According to Belarbi, these and other efforts couldn't come at a better time for the nuclear power industry.

"There are over 400 nuclear power plants in operation, and close to 100 new plants under construction," said Belarbi. "The work conducted in this department will play a major role in making these facilities safe."



Thomas Hsu



Kaspar Willam



Ashraf Ayoub



Yi-Lung Mo

"The work conducted in this department will play a major role in making nuclear facilities **safe.**"

— D.J. Belarbi

CEE Welcomes Four New Faculty

Of the college's nine new faculty, four have joined the Department of Civil and Environmental Engineering this fall, contributing to the college's strategic plan to achieve Tier One status.



Bora Gencturk
Assistant Professor

1

Bora Gencturk joined UH Civil and Environmental Engineering from the University of Illinois at Urbana-Champaign, where he received a Ph.D. and M.S. in civil engineering in 2011 and 2007, respectively. "I have always been interested in civil engineering; it is the oldest engineering discipline, from which all other disciplines originated," he noted. His experience of the 1999 Kocaeli earthquake in Istanbul led Gencturk to pursue a degree in civil engineering with an emphasis on earthquakes.

Gencturk's research goals are to contribute to the improvement of existing and new civil infrastructure. "Currently and over the next couple years, I will focus on sustainability and safety of reinforced concrete buildings under earthquakes," said Gencturk. "This involves both risk assessment studies at a rather larger scale for populations of structures as well as assessment of individual structures."

Gencturk aims to expand his research scope to include collaboration with multidisciplinary teams. "In the intermediate term, I would like to expand my research to involve other structural types, such as underground structures or power plants, and look at their design and assessment under multiple hazards," said Gencturk. "In the long term, I would like to apply some of the tools that I have, and will have, developed to problems in health and medicine, and other areas."

Gencturk employs a simple yet effective teaching philosophy. "In general I have two objectives in class: one is to develop a good rapport with the students, and the other is to be a role model," he said. "Universities exist to educate students, hence students are our most valuable asset." Gencturk is currently teaching Earthquake Engineering, a graduate level course, and will teach Reliability and Safety of Structures next semester, a new course.



Hyongki Lee
Assistant Professor

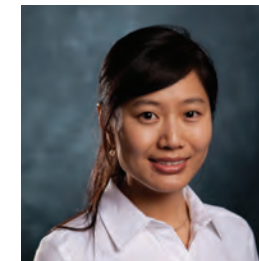
2

Hyongki Lee joined UH Civil and Environmental Engineering from Ohio State University, where he received a Ph.D. and M.Sc. in Geodetic Science in 2008. He also holds an M.S. and B.S. in Civil Engineering from Yonsei University in South Korea, in 2002 and 2000, respectively.

Lee is one of two new professors at the National Center for Airborne Laser Mapping (NCALM) at UH, supporting the Geosensing Systems Engineering & Sciences graduate research program. His research focuses on the use of satellite observations to solve environmental issues. He is currently characterizing terrestrial water dynamics of the Congo River Basin by measuring wetland water volume. "It's the third largest in size and second only to the Amazon River in discharge," said Lee. "We barely have information about the Congo Basin because it's in a remote region. Our only viable option is to use satellite measurements."

Lee's research investigates how much water is on the Congo Basin. By using measurements from the Gravity Recovery and Climate Experiment (GRACE), twin satellites that observe mass redistributions over the earth, Lee is able to detect terrestrial water mass variations over the study area. He also uses satellite altimetry, which gives measurements of surface water elevations along the satellite orbital track. His future research goal is to monitor floods by establishing an operational system over areas in which frequent flooding occurs, and enable near real time flood monitoring, which will have a positive impact on disaster mediation.

Lee currently teaches Geographic Information Systems, a graduate level course. "I enjoy the small class size, which lets me have one to one interaction with students," he said. He is also developing a new course on satellite altimetry and interferometric synthetic aperture radar (InSAR), which he will teach in the spring semester. Lee's take on UH? "There is much diversity on campus; that provides good synergy for the Houston engineering environment."



Mo Li
Assistant Professor

3

Mo Li joined CEE from the University of Michigan, where she received her Ph.D. in Civil Engineering in 2009, M.S. in Industrial and Operations Engineering in 2008, and M.S. in Civil Engineering in 2004. Her research focuses on creating and implementing innovative material technology for sustainable and intelligent civil infrastructure systems.

One of Li's research areas is addressing durability and resiliency aspects of structures through innovative self-healing materials. "Concrete cracks. Cracking opens channels for the penetration of chloride, moisture and other chemicals that will accelerate deterioration and corrosion," Li said. "We are developing new concrete that heals its own cracks, like human skin, or sea shells with self-healing capacity. We would implement the biomimicry self-healing concrete into bridge decks, marine and offshore structures, and underground structures such as oil and gas wells and pipelines, where minimum maintenance and repair are of foremost importance. The structures will become very resilient, and can continuously recover most of their original integrity and mechanical loading capacity."

Li's research also combines nanotechnologies, micromechanics and structural health monitoring techniques to create smart, multifunctional self-sensing infrastructure materials. "We aim to create a new generation of infrastructure materials that not only serve as a major material component for structures with intrinsic damage tolerance, but also offer capacity for distributed and direct sensing of damage and strain wherever the material is located," Li said.

Li also works with social and environmental scientists to develop and apply interdisciplinary system-based analytical tools, including industrial ecology approaches and complex systems modeling methods to understand a variety of complex sustainability issues. Currently, Li teaches an undergraduate statics course for The Honors College. She plans to develop two new courses over the next two years (Materials and the Environment and Industrial Ecology) to support the university's materials initiative and sustainability initiative.



Kalyana Nakshatrala
Assistant Professor

4

Kalyana Nakshatrala joined UH Civil and Environmental Engineering from Texas A&M University, where he was assistant professor in mechanical engineering. He received his Ph.D. in Structural Engineering in 2007, his M.S. in Applied Mathematics in 2007, and M.S. in Civil and Environmental Engineering in 2002, all from the University of Illinois at Urbana-Champaign. His background is in computational mechanics with an emphasis on flow and transport through porous media, and biomechanics.

One of Nakshatrala's research areas is biomechanics. He recently received a grant from the National Science Foundation to study the deformation of arteries and how this affects blood flow. "We'll know more about the function of the heart, and how diseases are initiated. In the long term, we will be able to find remedies," Nakshatrala said.

In the classroom, Nakshatrala employs an interactive teaching style. "I try to engage students," he said. "I want students to learn from their peers as well." His use of group quizzes in the undergraduate course Mechanics of Deformable Solids has been very effective as a means of fostering interaction amongst students. He is also working with Professor Kaspar Willam to refine the computational mechanics graduate program. "We are revamping existing courses to meet the current trends, as well as introducing new courses," Nakshatrala said.

Nakshatrala's dedication to his field stems from early ties to the world of science. "My father is a scientist; I grew up in a scientific society," he notes. "I love teaching and research; there is no better job than this." He brings new ideas from his research to the class, and conversely, his students give rise to questions that he addresses in his research. "UH is a terrific place for engineering," he said. "Students here are very enthusiastic and want to learn. There is a lot of energy here."

"There is much diversity on campus; that provides good synergy for the Houston engineering environment." — Hyongki Lee

Longtime Civil Engineering Professor Osman Ghazzaly Retires



Osman Ghazzaly

Osman Ghazzaly came to the University of Houston Cullen College of Engineering in 1966 as an assistant professor in the Department of Civil and Environmental Engineering. Three years later he was promoted to associate professor, a position he would hold for nearly three decades before being promoted to professor in 1997.

Along with teaching graduate and undergraduate courses in geotechnical engineering, and undergraduate courses in mechanics, materials and transportation, Ghazzaly served as associate chair of the department, director of graduate and undergraduate studies, and graduate and undergraduate advisor over various periods in his academic career. He has published and presented research on a number of topics in geotechnical engineering, and has supervised the research of more than 10 graduate students.

Ghazzaly is a life member of the American Society of Civil Engineers. He has received the college's Career Teaching Award, the Kittinger Award for Excellence in Teaching, the UH Alumni Organization Outstanding Faculty Award, the George Magner Academic Advising Award, the Dukler Distinguished Engineering Faculty Award, and numerous Excellence in Teaching awards, including Professor of the Year from the UH ASCE Student Chapter. He was also honored with the El Paso Corporation Faculty Achievement Award in Teaching and Scholarship.

Ghazzaly received his B.S. in Civil Engineering from the University of Cairo in 1958, and his M.S. in Civil Engineering and Ph.D. in Civil/Geotechnical Engineering from The University of Texas at Austin in 1963 and 1965, respectively.

Accolades

Hugh Roy and Lillie Cranz Cullen Professor and Department Chair **Abdeldjelil Belarbi** received ACI's Joe W. Kelly Award, an international award given for outstanding contributions in education relating to the field of concrete.

Associate Professor **Jerry Rogers** received the American Society of Civil Engineers Environmental and Water Resources Institute's 2011 Lifetime Achievement Award. He also received ASCE's 2011 Civil Engineering History and Heritage Award.

Assistant Professor **Mina Dawood** won an Outstanding Teaching Award from the UH Cullen College of Engineering.

Y.L. Mo received the department's first Faculty Achievement Award. He also received a DOE grant under the Nuclear Energy University Program for over \$500K.

Moores Professor of Civil Engineering **Thomas Hsu**, with **Abdeldjelil Belarbi** and **Yi-Lung Mo**, received a \$449K grant from TxDOT. Hsu was also recognized at the 2011 American Concrete Institute Annual Convention for 50 years of membership.

Distinguished Cullen Professor of Engineering **Kaspar Willam**, along with ten other faculty, received a \$400K grant from the NSF's Major Research Instrumentation Program to acquire one of the most advanced systems to study deformation of materials and structures.

Professor **Hanadi Rifai** received a \$500K grant from the Texas Commission on Environmental Quality (TCEQ) to research toxic chemicals in the Houston area's major bodies of water. She was also named Fellow of the American Society of Civil Engineers.

Assistant Professor **Debora Rodrigues** helped develop a nanotechnology-based material extremely effective at killing E. coli and other pathogenic bacteria. She is

also co-principal investigator on a \$429K grant from the NSF for "Innovations in Nanotechnology," a Research Experience for Teachers program.

Assistant Professor **Hyongki Lee** received a \$663K grant from NASA to study terrestrial water dynamics in the Congo Basin using GRACE Temporal Gravity Field Solutions.

Assistant Professor **Kalyana Nakshatrala** received a \$50K grant from Sandia National Laboratories. He received a \$192K grant from NSF to study strongly coupled fluid-structure interaction, and a \$180K grant from the DOE to develop strategies for coupling pore-scale and continuum models.

Mina Dawood, Abdeldjelil Belarbi and **C. Vipulanandan** received nearly \$500K from TxDOT to study bridge maintenance operations and repair systems for deteriorated bridge piles.

Ashraf Ayoub and **Abdeldjelil Belarbi** received an NSF grant for nearly \$300K to establish new constitutive laws for Fiber-Reinforced Polymer (FRP)-strengthened reinforced concrete elements subjected to pure shear.

Kaspar Willam and **Ashraf Ayoub** received an NSF grant for \$300K+ to investigate performance of brick and mortar wall panels under combinations of in-plane loading representative of masonry structures under seismic events.

Craig Glennie received a research award for \$250K from the Transportation Research Board to develop guidelines for using mobile LIDAR in transportation applications.

Stephanie Davis, CEE Financial Coordinator, received her bachelor's degree in Business Administration-Management from UH-Downtown.



Nathan Howell
Ph.D. Candidate
Environmental Engineering

by Esmeralda Gomez

Nathan Howell's work on Professor Hanadi Rifai's research team has taken him to the Houston Ship Channel and Galveston Bay, where he is part of a group that tests water quality.

"We look for certain persistent organic pollutants, namely dioxins and polychlorinated biphenyls (PCBs)," Howell said. "We're doing a lot of studies to figure out where they're coming from, how long they've been there, and where they're going."

Howell has spent the previous three summers collecting sediment, water and several species of fish. The team then spends the remainder of the year analyzing data that comes back from the testing and modeling it. His team's research informs future advisories on fish consumption.

"We have to determine how the fish are getting the pollutants and make recommendations on what exactly people should do, as far as eating less of a particular kind of fish, or cleaning up particular things," he noted.

For two years, Howell has participated in GK-12, a program at UH that teaches

graduate students how to articulate the complexities of science and engineering to those with scientific and non-scientific backgrounds alike. His audience comprised an 8th-grade technology applications class at Fonville Middle School in north Houston. Once a week, Howell visited the class, and developed lessons and activities along with the regular teacher.

"The objective was to find a way to bring my research into the classroom, and to be an ambassador of engineering, research and science," he said. "The challenge was making it fun and interesting, while staying within bounds of supporting the curriculum that was already in place."

One of the projects that Howell initiated for the students involved mapping using Google Earth. "For the students who did the very best, we went out and did a plastics pollution sampling trip to six urban bayou locations," he said. "We took samples, photos and descriptions of different types of plastic, and then we had all the classes work together to map it using Google Earth. This gave them, in a bulk sense, what is going on with pollution."

For Howell, the benefit of participating in GK-12 is a demonstrated improvement in how he communicates about research. "Now, I think a whole lot more about taking what I'm doing and being able to talk to anyone about it. I think of analogies to drive home a point. If you can help an 8th-grader with a really different background from you understand, then you're doing really well, as far as communication goes," he said.

Howell's venture into environmental engineering stemmed from a connection he made after graduating from The University of Texas in 2004 with a chemical engineering degree.

"I got a job in Houston as a consultant in environmental engineering, related to ground water. As it turns out, my boss was married to my current professor, and after two years at that job, he convinced me to come to UH, so I became a student of Professor Rifai."

Howell will complete his Ph.D. this year, and looking forward, seeks to start his own research group in a post-doctoral position.

CEE Salutes Two Academy Members for Distinguished Careers

Two members of the University of Houston Academy of Distinguished Civil & Environmental Engineers have retired this year, leaving a record of significant contributions not only to their respective fields but society at large.



Steven E. Simmons

Steven E. Simmons (BSCE '81) began his career in 1982 as a project manager in the Texas Department of Transportation's Houston District Northwest Harris/Waller Area office. In 1986 he became a licensed professional engineer and went on to become deputy district engineer for the Houston District in 1993. Simmons was later named to the post of Fort Worth district engineer in 1998. Under his leadership, the Ft. Worth District received the Design Excellence Award for a Metropolitan District in 1998, 1999 and 2000.

Throughout his nearly 30 year career at TxDOT, Simmons has had the opportunity to solve transportation issues throughout the state. In November of 2001, he was tasked with implementing policies and programs as deputy executive director, a post in which he was responsible for over 80,000 centerline miles of road in Texas.

Simmons has served on the Civil and Environmental Engineering Industrial Advisory Boards for the University of Houston and the University of Texas at Arlington. He received the UH Engineering Alumni Association's Distinguished Young Engineering Alumnus Award in 1997 and the Distinguished Engineering Alumnus Award in 2005. This year, he was selected as a member of the department's newly established Academy of Distinguished Civil & Environmental Engineers. Simmons has been married to his wife, Lisa, for over 31 years; they have two sons.

Charles Beyer (BSCE '72, MSCE '77) entered the construction industry while in the Texas Air National Guard, where he worked on airfield construction projects. He transitioned to a career in the private sector in 1968, working on projects for the City of Houston, Harris County and TxDOT. In 1983, he created Beyer Construction to provide concrete paving services in the Houston metropolitan area.

During his career as the owner of Beyer Construction, he completed well over 1,000 miles of pavement projects, the distance from Houston to Chicago. Throughout, he maintained strong working relationships with local officials and worked to improve permitting procedures and solutions to critical infrastructure challenges. In 2003, he launched an annual civil engineering luncheon at UH, establishing a network for alumni and students to cultivate professional opportunities.

Beyer is the 2001 recipient of the UH Distinguished Engineering Alumnus Award and was inducted this year into the Academy of Distinguished Civil & Environmental Engineers. Beyer has been married to his wife Nancy for 40 years. They have three children and three grandchildren.



Charles Beyer

Alumni Awards

The UH Cullen College of Engineering and the Engineering Alumni Association honored four civil and environmental engineering alumni for their significant contributions to the profession and society at the annual Alumni Awards Gala in June.

Lifetime Achievement Award

Jesse G. Gonzalez, P.E.

SpawGlass Construction Corp. (Retired)

Gonzalez graduated from the University of Houston with a B.S. in civil engineering in 1969. A 40-year veteran of SpawGlass, prior to his promotion to chairman of the board, Gonzalez held the position of president of SpawGlass or one of the SpawGlass Companies since 1979. He was directly responsible for overseeing the management of a wide range of construction projects. Gonzalez is a registered Professional Engineer, and has served as president of the local chapters of Associated Builders and Contractors and Associated General Contractors of America. He also served as chairman of the Greater Heights Chamber of Commerce. He is a Life Member of the Houston Alumni Organization and serves on the UH Civil and Environmental Engineering Advisory Board and on the Engineering Leadership Board. He continues to serve on the SpawGlass board as well as on the boards of the Associated General Contractors of America, Commercial State Bank and of Conewago Enterprises.



Distinguished Young Engineering Alumnus Award

Gabriel Garza, P.E.

Principal and President, Garza + McLain Structural Engineers

A native of Houston, Garza began taking classes in the UH Department of Civil and Environmental Engineering in 1991 and was active in the student branch of the American Society of Civil Engineers, and was also a member of Chi Epsilon and Tau Beta Pi. As an undergraduate, Garza worked part time in the Structural Lab and after graduating with his bachelor's degree, he became one of Professor Thomas Hsu's research assistants. Garza graduated with his master's degree in 1996. While working as a graduate engineer, Garza volunteered his time at the Gerald D. Hines College of Architecture and the Civil Engineering Department. For the college of architecture, he designed and detailed design-build studio projects and guided projects in the Design II class. He also lectured the undergraduate Reinforced Concrete Design class for one semester. Garza worked for three consulting engineering firms prior to co-founding Garza + McLain in 2006 with Anthony McLain.



Distinguished Engineering Alumni Award

Rafael Ortega, P.E.

VP and Business Group Director - Lockwood, Andrews & Newnam Inc.

Ortega is a vice president of Lockwood, Andrews & Newman Inc., a company he joined in 1981 after receiving his B.S. in civil engineering from the University of Houston. He has worked on numerous projects, including the original construction of the City of Houston's 69th Street wastewater treatment plant, and the City's Northside Sewer Relief Tunnels. As a vice president, he directs an infrastructure group that focuses on large diameter pipelines, of which he is one of the nation's leading experts. In 2008, he was named Most Valuable Professional in the Private Sector by the Gulf Coast Trenchless Association and is a member of the UH Academy of Distinguished Civil and Environmental Engineers. He was one of the founding board members and past president of the UH Engineering Alumni Association. In addition to his bachelor's degree, Ortega received an MBA from the University of Houston in 1985.



Roger Eichhorn Leadership Service Award

William F. Fendley, P.E.

Director, Cobb, Fendley and Associates Inc.

Fendley co-founded and currently sits on the Board of Directors for Cobb, Fendley & Associates Inc. He has over 40 years of experience involving civil engineering and land surveying projects in Texas and is a proud graduate of the University of Houston. He earned his B.S. in civil engineering in 1971 and is a registered Professional Engineer in six states as well as a Registered Professional Land Surveyor in Texas. Fendley worked for six years with the Houston District of TxDOT while attending the UH and for nine years with a civil engineering firm before starting his own firm in 1980. Fendley currently holds leadership positions in Professional Engineering organizations at the national, state and local levels. He is a member of the Engineering Leadership Board and the Civil Engineering Advisory Board. He also serves as director of the Waller County Transit Authority and is involved with various economic development groups.



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Your support matters!

Gifts to UH Department of Civil and Environmental Engineering help fund much-needed scholarships for our students, help us renovate our labs and facilities to be competitive with other Tier-One programs, and help us support the activities of our student organizations. Thank you for continually helping us meet these needs!

Endowed Scholarships Support Student Achievement

Through a number of scholarships, the Department of Civil and Environmental Engineering helps students realize their educational goals. The following students received endowed scholarships that were created by, or in honor of, UH Civil and Environmental Engineering alumni.

ACI Scholarship

Kim Pham

Cobb/Fendley Endowed Scholarship

David Davila
Hector De La O
Emile Ouedraogo
Kevin Plaisance
Andrew Tiffany
Yesiya Lorenza Tjoe

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