

# The Cougar Engineer

summer 2009

volume 2



**Beating the Odds**  
Alumnus Grows  
Successful Company



**Inspiring Dreams**  
Alumna Advances Women  
and Minorities in Engineering

**SECURING OUR SYSTEMS:**  
Confronting the Infrastructure Crisis

Photo by Thomas Shea

FEATURE

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# Securing Our Systems: Confronting the Infrastructure Crisis

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*On the cover:* Illustration by Harriet Yim  
Photography by Thomas Shea

From the Dean

Greetings Cougar Nation!

Since launching the first issue of *The Cougar Engineer* last January, we've had an incredible amount of positive feedback and increased communication from you, our Cougar family. Through this publication, we hope to reconnect with our alumni base and build Cougar spirit—both critical as we make a major push toward becoming a top tier research institution.



Photo by Thomas Shea

On that note, we recently received news that legislation has passed making a pathway for additional Tier One research universities to emerge in Texas. In fact, this legislation includes additional funding for universities that meet specific criteria as defined by the state. The University of Houston is definitely at the forefront of this opportunity and we need all Cougars to rally behind us as we make a significant push to become competitive on the national level.

As we continue to make progress toward this goal, we'll be communicating with you through a variety of media, including our magazines, electronic newsletter and our newly established Cullen College news page on Facebook. If you enjoy reading news feeds on Twitter, make sure to follow Cullen College Live! where we are now "tweeting" college news and announcements. We fill you in on each of these social networking activities on page five.

In this issue, we also feature several alumni who are addressing our nation's infrastructure crisis. These alumni hold significant positions at the U.S. Environmental Protection Agency, Texas Department of Transportation and the city of Houston. Each are working diligently to ensure our road and water systems stay running.

Go Coogs!

Joseph W. Tedesco, Ph.D., P.E.  
Elizabeth D. Rockwell Endowed Chair and Dean

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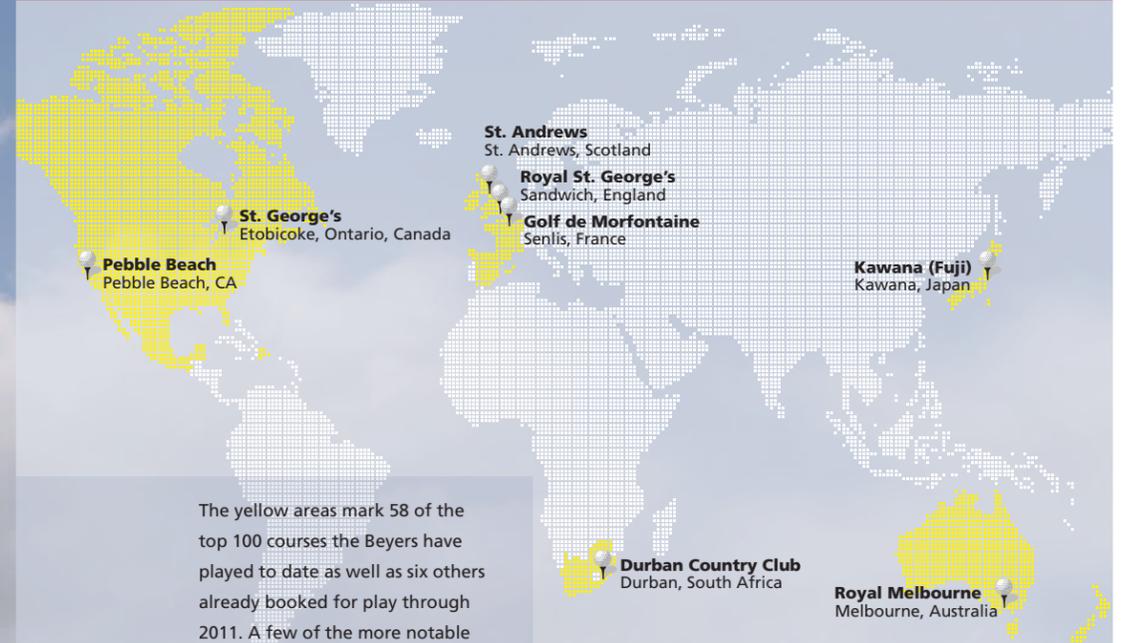
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Photo by Thomas Shea

## Golfing the Globe



The yellow areas mark 58 of the top 100 courses the Beyers have played to date as well as six others already booked for play through 2011. A few of the more notable courses played are highlighted.

**C**harles Beyer (1972 BSCE, 1977 MCE) has felt the spray from the ocean on the coast of Scotland, gazed upon the Rock of Gibraltar in southern Spain and come face-to-face with crocodile hazards in South Africa.

None of these experiences, however, has been about merely sightseeing for he and wife, Nancy. It's been about something more, something bigger—the quest for golf's holy grail.

For the last eight years, the couple has been working to complete *Golf Magazine's* 2001 list of the Top 100 Courses in the World. So far, it is a mission that has taken them from their Houston home and Beyer Construction, the business they have owned and operated for more than 25 years, to play at 58 of the most elite, historically significant courses around the globe.

To learn more, read the full story online at [www.egr.uh.edu/cougarengineer](http://www.egr.uh.edu/cougarengineer).

—By Erin D. McKenzie



Photo by Mark Lacy

### IE Graduate on Nationally Syndicated Sports Show

NASA Astronaut **Rex Walheim** (1989 MSIE) was a guest on the *Jim Rome Show*, a nationally syndicated sports talk radio show, March 11. Walheim, who was part of "The Guys Named Rex Streak," was the 20th straight and final guest on the show named Rex. On air, Walheim discussed watching the moon landing as a kid, how he became an astronaut, launching in the space shuttle and civilian space travel. Other Rex's appearing during the streak included Rex Ryan, the head coach of the N.Y. Jets; Rex Brown, a longtime bassist for the band Pantera; Rex Harnot, an offensive lineman for the Cleveland Browns; Rex Lee, an actor from the television show *Entourage* and Rex Grossman, an NFL quarterback free agent.

### Newspaper Features ChE Alumna

The *Arizona Daily Star* highlighted **Katherine Kent** (1986 BSChE) and her dedication to renewable energy through her Tuscon, Ariz. business, The Solar Store, in their June 15 edition.



### \$48.4 Million Project Has Ties to CE Alumna

SpawGlass, where **Jesse Gonzalez** (1969 BSCE) is chairman, is among four companies highlighted in the *Houston Business Journal's* March 30 edition for their collaboration on construction and site improvements at Ellington Field for the U.S. military.

### ME Alumnus Collaborating With College



A partnership spearheaded by **Terrance Ivers** (1980 BSME), president of AMEC Paragon, is joining together international energy companies, the Cullen College and an Angolan university to help boost technical training and reduce Angola's dependence on foreign technical expertise.

\* To hear Walheim's radio interview and read the articles on Gonzalez, Ivers and Kent, visit [www.egr.uh.edu/cougarengineer](http://www.egr.uh.edu/cougarengineer).

### Mark Your Calendar

**Engineering Alumni Association Annual Meeting**  
Aug. 20 at 6 p.m., UH Athletics/Alumni Center

**2009 Tailgates**  
EAA Pavilion on the west side of Robertson Stadium

For more information, visit [www.egr.uh.edu/events](http://www.egr.uh.edu/events) or call 713-743-4215.

**UH vs. Northwestern State University**  
Sept. 5, tailgate at 2 p.m., kickoff at 4 p.m.

**UH vs. Texas Tech University**  
Sept. 26, tailgate at 6 p.m., kickoff at 8:15 p.m.

**UH vs. Southern Methodist University**  
Oct. 24, tailgate at 4 p.m., kickoff at 6:30 p.m.

**UH vs. The University of Southern Mississippi**  
Oct. 31, TBA

**UH vs. University of Memphis**  
Nov. 21, TBA

**UH vs. Rice University**  
Nov. 28, TBA

## The Y Building

Many of you had people in our office rolling and others touched us with your heartfelt tales about the Y Building after our story ran in the winter 2009 issue.

As a thank you for all the calls and e-mails, we thought it only appropriate to pay you back with another sampling of some of your best. Taken directly from your recent submissions, here are the top ways YOU used the building:

■ *A spot to watch the "girls." Though we're not sure how long some of you waited. One alumnus admitted there were only three women attending during the time he pursued his degree.*

■ *A nurturer of future problem solvers. Not only did the old Y provide a common ground for the study sessions that allowed you to keep up with a rigorous academic schedule, it gave you a place to prepare for competitions and carry out student organization business.*

■ *The butt of the joke. You may love it, but just can't help mocking it. Most know the phrase well, but for those who don't we'll let you in the circle—"Y was it ever built?"*

■ *Like a good friend's couch, the Y Building was a crash zone. You stashed sleeping bags, clothes and cans of Raid in its nooks and crannies. While we won't name any names, one of you even confessed to staying there for an entire month.*

■ *Comrodory. You bonded over loose monkeys from the psychology department, sleepless nights and experiments gone awry.*

We are still eager to hear more! Direct comments to the college's office of communications by phone at 713-743-4220 or via e-mail at [cougarengineer@uh.edu](mailto:cougarengineer@uh.edu).

\*Be sure to watch for our coverage of the Y Building's last days on our newsroom: [www.egr.uh.edu/news](http://www.egr.uh.edu/news)



## Get Connected

Sure, you have left campus and maybe even Houston, but that doesn't mean you have to be out of the loop. Staying connected with the college and your fellow Cougar engineers is only a click away with alumni groups established especially for you on these three popular social networks:

twitter

For those who crave the most up-to-date news, follow Cullen College Live! on Twitter. Through our real-time "tweets," you can enjoy our live news feed and other fun facts about the college. Join at [twitter.com/cullencollege](http://twitter.com/cullencollege).

LinkedIn

Looking to connect with other alumni on a professional level? Join our LinkedIn group. At last count, our group on this business-oriented networking site was nearing 250 members. Join at [www.linkedin.com/groups?gid=28401](http://www.linkedin.com/groups?gid=28401).

facebook

Join our Facebook group and reconnect with your former college buddies, even make new ones. Weigh in on discussions on the group forum, read recently posted college news articles and see photos from the latest college and alumni events. Join at [www.facebook.com/cullencollegenews](http://www.facebook.com/cullencollegenews).



# Securing Our Systems: Confronting the Infrastructure Crisis

Feature by Erin D. McKenzie | Photos by Thomas Shea

For years now, the basic building blocks that keep Americans moving have been decaying.

One in five bridges in the United States is more than 50 years old. The country's roughly 85,000 dams average just over 51 and some 72,000 miles of sanitary sewer and water pipes are 80 years or more.

Across the country, the many great public works projects of the 20th century—tunnels, bridges, aquifers and former president Dwight D. Eisenhower's interstate highway system—are at or beyond their designated life span.

In fact, a 2009 report by the American Society of Civil Engineers branded the country's infrastructure with an overall grade of D—the same grade given on their previous report five years earlier.

Without a serious investment—\$2.2 trillion from all levels of government over the next five years—infrastructure will continue to deteriorate, according to ASCE President D. Wayne Klotz (1976 MSCE).

“Crumbling infrastructure has a direct impact on our personal and economic health, and the nation's infrastructure crisis is endangering our future prosperity,” said Klotz of ASCE's 2009 Report Card, which evaluates the condition of 15 infrastructure entities that include everything from transit to solid waste. “Not only could investment in these critical foundations have a positive impact, but if done responsibly it would also provide tangible benefits to the American people such as reduced traffic congestion, improved air quality, clean and abundant water supplies and protection against natural hazards.”

Alumni from the University of Houston Cullen College of Engineering are taking this effort to heart. Poised in high places across several different infrastructure entities, Cougar engineers are among those engaged in finding innovative, cost-efficient ways to confront the infrastructure crisis.

## KEEPING US RUNNING

From the U.S. Environmental Protection Agency to the city of Houston, UH engineering alumni are in roles setting the policies, budgets and laying out the plans that keep us moving forward.

As public servants, they are devoting their attention to securing our systems the best way possible. However, many factors exist that make this difficult. The biggest—money.

With the United States in the midst of a recession and inflation that has raised the cost of goods, the list of improvement projects that have yet to break ground are only getting longer with each passing year.

Projects that are going forward, for the most part, are not major overhauls reworking a system created for a different time with a population several million shy of what's using it today. More often, available funds are going toward cheaper, more temporary solutions.

It is something **Steven Simmons** (1981 BSCE), deputy executive director for the Texas Department of Transportation, knows all too well.

In a post that has him responsible for more than 80,000 centerline miles of road in the state, he is one of many prioritizing his way through budget shortfalls. His solution—a 25-year plan to address highway infrastructure, which in Texas averages 43 years in age.

“Right now, the funding is limited,” said Simmons. “You have to prioritize where you are putting the money and the new capacity is taking a backseat where we really need it. We are using the Band-aid approach, and trying to postpone the inevitable for three, four, five years.”

In the first 10 years of the plan, he said, just five year's worth of projects on the list are complete. With funding sources that haven't seen increases in decades, he and others are finding it challenging to change these numbers.

“Our main funding source is from the state gas tax, which is 20 cents per gallon,” Simmons said, noting the tax has not been raised since 1991. “We only get 15 cents out of that 20 cents, and then when you factor in inflation—it's been tough to keep up.”

## STEVEN SIMMONS (1981 BSCE)

DEPUTY EXECUTIVE DIRECTOR FOR THE TEXAS DEPARTMENT OF TRANSPORTATION

During more than two decades with TxDOT, Simmons has held many roles that have had him solving transportation issues throughout the state. The last eight of those years, he has been tasked with implementing policies and programs for the agency as deputy executive director.





Limited funding has many, such as **Mark Loethen** (1981 BSCE), re-evaluating the way things are being done.

As the city engineer for Houston, Loethen is among several in the city's public works department reviewing the standards set for everything from drainage to roads—ensuring traffic lights are timed to avoid congestion and looking at technical specifications for drainage to help guarantee systems' most efficient operation.

It's all part of securing our modern lifestyles, and sparing us from suffering any adverse affects. However, reviewing standards and prioritizing projects can only go on so long before something

more needs to be done as **Dannelle Belhateche** (1989 MSENVE), senior assistant director of wastewater operations for the city of Houston, is aware.

The city's aging sanitary sewer pipeline is being infiltrated by storm water, overcharging collection systems and stretching her already tight budget. Much as Simmons did, Belhateche is overseeing a 10-year plan to rehabilitate more than 30 percent of the nearly 7,000 miles of collection pipe.

It is only delaying the inevitable.

"There is going to be a breaking point beyond which we can provide the level of treatment that's going to be required of us if bigger investments are not made," said Belhateche. "Right now we are pretty much living on the original investments that were made, and just every so many years kind of dusting them off, fixing them up, modernizing the technology a little bit and going forward."

It is during these times, when our infrastructure is most vulnerable, the threat to our security increases.

**MARK LOETHEN (1981 BSCE)**  
CITY ENGINEER FOR THE CITY OF HOUSTON

While Loethen has been with the city nearly five years, it was not until last year he signed on as city engineer. In this post, he is responsible for the planning, maintenance, construction management and technical engineering of the city's infrastructure.

**COSTLY CONSEQUENCES**

Out of sight; out of mind.

It's an old adage quite representative of the way many think about infrastructure. But it is a mentality UH engineering alumni say needs to change.

Without public support, engineers face a daunting, if not near impossible task to keep our modern lives on track. The absence of innovative plans that address the future health of infrastructure and the money to back those ideas put infrastructure at an increased risk of everything from overuse to natural disasters.

More than once in the last few years, the media has offered reminders of the costly consequences when aging systems are not properly maintained or replaced.

In 2005, it was the collapse of an eight-lane interstate bridge in Minneapolis that killed 13 people and more recently, the rupture of a 1920s-era steam pipe in New York that killed one and caused thousands in damage.

"The infrastructure, whatever it may be, is designed with an estimated life span and anything you get above and beyond that lifespan is a great thing," Loethen said. "But once you start approaching that lifespan, if you don't address that or don't plan for it and it does fail then there's a much larger cost involved."

A waning economy only adds insult to injury, said **Greg Fife** (1983 BSChE), the region's on-scene commander for the United States Environmental Protection Agency.

"We are seeing, in a number of places, contaminants getting in through old lines; everything from chemical spills to part stores or an auto repair shop, all dumping waste," said Fife of underground waterlines in the five-state area he covers. "When the economy turns bad that's when we get the sites. People cut corners and don't have the money to dispose of the waste properly."

In his 22 years with the EPA, Fife has been taken to many such locations. He

has seen a dry cleaning business cut holes in the floor to pour out chemical waste that in turn contaminated the well water of nearby residents. And on a larger scale, a defunct lab that took in radioactive waste, but rather than dispose of it properly, hid it in the building's walls for years.

"With the downturn of the oil industry they went belly up," Fife recalled of the lab. "We found hundreds of sources in there and radiation levels at the perimeter forced nearby businesses to move. That was a direct reflection of the state of the economy; leftover from that early 80s oil bust. I think we are going to see more and more of those things if something isn't done."

**GREG FIFE (1983 BSChE)**

REGION SIX ON-SCENE COMMANDER FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

As on-scene commander, Fife's job is to ensure chemicals and other hazards do not find their way into our critical infrastructure. For the last 22 years, he has overseen clean up for some of the worst toxic hazards in his region, which includes Texas, Louisiana, Arkansas, New Mexico and Oklahoma.



We saw this happen four years ago when the levees in New Orleans structurally failed after Hurricane Katrina sending several million gallons of water rushing over streets and into homes. The flooding forced hundreds to seek shelter on their rooftops and led to the deaths of more than 1,500 others.

Overall, levees received a D- from ASCE—cited mainly for their age, which averages 50 years or more, and the risk they now pose to the large amount of development behind them.

“Aging infrastructure is more susceptible to damage during hurricanes,” Fife said, “and more and more we are seeing much larger damage as its exposed to these natural disasters.”

Among the first to respond to the New Orleans disaster, Fife helped rebuild water lines carried away by flooding

and worked to clear waterways of contaminants. He was given similar tasks last year when Hurricane Ike struck Texas.

One of the most costly storms in United States history, Ike made landfall on the coast as a Category 2 storm bringing with it a surge of water near 20 feet. Flooding made roads impassible. High winds snapped trees, destroyed homes, damaged power lines and left more than two million without electricity—some for close to three weeks.

Without power, other systems suffered. The plants supplying drinking water and treating wastewater were unable to operate and traffic signals were out or gone altogether.

In the Greater Houston area, the massive power outage has spurred discussion over devoting funding to

burying power lines and plans to beef up response plans. But with Ike being the first major hurricane to make landfall in Houston in well over a decade, many are finding it difficult to pull funds from already stretched budgets to incorporate the infrastructure necessary to more comfortably weather the next storm.

Belhateche, and the rest of Houston’s public works department, are currently looking at whether to invest in an alternate power source. Lack of power, not structural damage, was the large problem for the city’s wastewater and drinking water systems.

“The length of time that it took for power to be restored made things extremely difficult,” Belhateche said. “In water and wastewater systems, everything is based on continual flowing. When things stop flowing, things happen in the pipes and then it’s very difficult to get things flowing again.”

But bringing in a stand-in power source for the major treatment plants could not only eliminate a loss of these services, but also lingering backup problems following the next hurricane. However, the solution’s hefty price tag and the uncertainty of another major hurricane affecting Texas in the near future are making it difficult to justify.

“There are people on both sides of the thing,” Belhateche said. “People never want it to happen again, but there are those of us who say we can’t really plan for the outlier event because the cost is so huge and our needs today are very large as well.”



### DANNELLE BELHATECHE (1989 MSEnvE)

SENIOR ASSISTANT DIRECTOR OF WASTEWATER OPERATIONS FOR THE CITY OF HOUSTON

Belhateche is working to protect public health and the environment in her role as senior assistant director. The role, which she took over in February, has her not only operating and maintaining 40 wastewater treatment plants and 420 lift stations, but also more than 6,000 miles of sewer pipeline for the city.



### JIMMIE SCHINDEWOLF (1967 BSCE)

GENERAL MANAGER FOR THE NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY

Schindewolf took over his current role in 2003, where he is working to implement a three-phase groundwater conversion plan that will transition portions of North Harris County to surface water in an effort to reduce a growing problem with subsidence.

### OUR INNOVATORS, OUR COUGAR ENGINEERS

Despite budget constraints, UH engineering alumni are coming up with creative ways to make their dollars go further and squeeze out a few critical upgrades to our infrastructure systems.

Among the most critical upgrade as of late—water. This basic necessity is essential, but many of America’s drinking water systems are near the end of their useful life and do not account for growth in drinking water demand over the next 20 years, according to ASCE.

In the Greater Houston area, groundwater tables have already dropped dramatically.

“The problems with subsidence date back to the mid-1970s when land in the eastern portion of Harris County dropped nearly 10 feet because of excessive groundwater withdrawal by industries located along the Houston Ship Channel,” said **Jimmie Schindewolf** (1967 BSCE), general manager for the North Harris County Regional Water Authority. “Land that was well above sea level ended up being

below sea level. For example, there was a subdivision located in Baytown named the Brownwood subdivision that ended up being inundated by Galveston Bay.”

Even today, groundwater levels continue to be tested, forcing Schindewolf, the city of Houston and others to partner together to implement plans to convert systems to surface water. While the city’s plan will near completion in 2013, the water authority is working through 2030 to transition the northern most areas of Harris County.

The first portion of this three-phase plan is slated to commence in late 2010, when more than 73 miles of new water line will help deliver roughly 30 million gallons of surface water daily to an area encompassing 350 square miles.

Unlike groundwater, which is cheaper to produce, the new infrastructure and additional treatment necessary to bring surface water to homes can quickly test budgets.

In her prior role as head of the city’s drinking water operations, Belhateche was dealing with taste and odor issues in the surface water from Lake Houston

being supplied to customers the city had already transitioned under their surface water conversion plan.

“Lake Houston would have, historically, what are called lake turnovers—a kind of burping effect where the bottom layer becomes the top layer—when there are dramatic temperature changes,” Belhateche said. “The bottom layers would release sulfide and some other compounds that have an objectionable taste and odor.”

Responsible for roughly 50 of the near 385 million gallons of drinking water Houston uses daily, blue-green algae forming in the lake as a result of this effect was causing sulfide and manganese levels to elevate. The taste and odor problem had to be removed through additional treatment at the tune of nearly \$500,000 a year.

That was until Belhateche installed 20 devices called Solar Bees across a 600-acre area in the lake. The devices utilized solar panels to generate the electricity necessary to turn a fan that circulates the water, preventing the formation of algae and eliminating the extra treatment costs.

Just as water is a vital, basic need that keeps us thriving, our roads are helping to keep us prosperous as the main shipping lanes that pump life into our economy.

But as the population expands, these vital veins are growing more and more congested. Without money in the budget for major renovations, engineers are looking for ways to relieve the bottlenecks that ASCE estimates keep Americans stuck in traffic 4.2 billion hours a year.

That's why 13 years ago, TxDOT, the city of Houston, Harris County and Houston METRO partnered to form HoustonTranstar. Through a series of highway signage and an interactive Web site, the four agencies work together to provide advisories, roadway closures and real-time information on travel for more than 180 centerline miles of interstate in the Greater Houston area, said **Delvin Dennis** (1980 BSCE), district engineer for the six-county Houston District of TxDOT.

"Cameras across the region's roadways link back to Transtar to provide the real-time information," said Dennis. "There are millions who look at this technology everyday, who rely on it to get them to and from their destinations in a timely manner."

Another, more radical take on addressing congestion has states, including Texas, partnering with private investors to complete expansion projects.

"The lifecycle of our roads are running out," Simmons said. "We had a great building boom, and now all we are doing is trying to keep our system together. We need to find innovative ways to take things one step further."

Through these partnerships, investors are either being leased existing toll roads or constructing new toll roads. In each



#### DELVIN DENNIS (1980 BSCE)

TEXAS DEPARTMENT OF TRANSPORTATION DISTRICT ENGINEER FOR THE HOUSTON DISTRICT

Dennis has spent 28 years with TxDOT as a civil engineer in the Houston District. Since December 2008, he has served in his current role, overseeing all engineering operations for the six-county district.

instance, private investors are given the right to collect toll revenue.

Across the country it is slowly becoming a common practice with \$21 billion paid by private investors for 43 highway facilities between 1994 and 2006, according to the U.S. Public Interest Research Group. The group also reported that by the end of last year 15 roads had been privatized in 10 different states either through long-term highway lease agreements on existing roads or the construction of new private toll roads.

It is a model currently working in the Dallas/Fort Worth area where the North Texas Tollway Authority paid \$3.2 billion to TxDOT to design, construct, operate and maintain a 26-mile portion of State Highway 121 near a congested suburb—turning that section of road into a tollway and collecting its revenue for the next 50 years. The money paid to TxDOT for the rights, Simmons said, will fund scores of transportation projects in North Texas.



#### FUTURE PROSPERITY

Our vast infrastructure system is what allows us to hop a plane to do business half a world away, educate our youth and light our homes. Bottom line, it's how we function. To keep us prosperous in the future, UH engineering alumni said, it will take more innovative ideas and funding.

President Barack Obama recognized this in February when he introduced the American Recovery and Reinvestment Act. Expected to boost the flagging economy with a roughly \$787 billion stimulus package, it is a mixture of the expansion of unemployment benefits, federal tax cuts and new spending. Of the total, \$120 billion will go toward infrastructure and science spending.

In Texas, several entities will benefit from the package. TxDOT is among those, with a payout of roughly \$2.25 billion.

"Any amount of money helps, especially with the inflation that basically stopped a bunch of projects, the stimulus is allowing some of those projects to go forward," Simmons said. "And while \$2.25 billion is a good chunk of change, our annual amount we get from the federal government is around \$2.6 billion. It's basically one year's worth of federal funding that we got. So does it solve our problems, no, but will it help, of course."

Of TxDOT-allotted stimulus funds, the Houston District will see \$485 million, said Dennis. In his six-county region, this will provide for the reconstruction of sections of Interstates 10 and 610, the completion of the last four direct

connectors at Beltway 8 and U.S. 59 North as well as the maintenance and rehabilitation of several other roads in the district.

Others still wait, but all said they recognize the receipt of stimulus money is not a fix-all solution. It will take more than this boost from government to fully address the infrastructure crisis. One of the first, alumni said, is public education.

"We are doing a good job if no one is thinking about us today," Belhateche said. "You turn on the tap and the water's there. You flush the toilet; it's gone. We have a lot of public education and outreach to do to raise the level of awareness for the value of the service we provide and what those real costs are. We're going to need the cost to go up to pay for replacing infrastructure, for improving treatment facilities and for adding treatment capacity."

## BEATING THE ODDS

By Erin D. McKenzie

Almost two decades ago, **Alireza “Alex” Ghodsi** (1978 MCE) took one of the biggest chances of his life and devoted his every waking hour to a dream.

With little more than a \$5 investment to buy the company name, Rigid Structures, Ghodsi took the leap to start his own engineering consulting business. He quit his job as vice president of United Structures of America, taking with him roughly 12 years experience and longtime friend Fred Campana to realize the goal.

The two spent the next few years working to get the company off the ground, corresponding with clients from their bedrooms and averaging little more than three hours sleep a night.

Despite odds stacked against them—the National Federation of Independent Business reports just 39 percent of businesses are profitable over their lifetime—Ghodsi and Campana persevered. Within four years the company, specializing in the design and fabrication of steel structures, was netting profits in the millions.

In the years since then, Ghodsi and Campana’s dedication to smarter, better

engineering has allowed them to grow the company—now Rigid Building Systems—into a \$140 million business operating close to 500,000 square feet at four different locations in the U.S. and overseas.

“It was a long journey to get to this point, and I’ve liked the challenge,” said Ghodsi. “It’s what got me to where I am.”

Yet his entrepreneurial dream, along with several others he would have in his lifetime, did not come easy.

Long before sacrifices were made to start the company, he was focusing efforts on satisfying an entirely different aspiration altogether. For the teenage Ghodsi, this was leaving his native Iran to pursue a college degree in America.

It took two years of convincing before his family, who came from a long line of medical professionals, gave in to his wishes and allowed him to break from family tradition and pursue studies in engineering thousands of miles from home.

At 18, and armed with nothing more than a suitcase of clothes, he found himself on the campus of Oregon State University perfecting his English.

A year later, he went on to pursue a bachelor’s degree in civil engineering from Lamar University and later a graduate degree at the University of Houston.

Along the way, there were a handful of odd jobs cutting grass, cooking fried chicken and running a convenience store before he finally fulfilled his vision of a higher education and graduated from UH with his master’s degree in civil engineering in 1978.

“I believe in hard work, discipline and dedication,” he said. “If you do these, you will succeed.”

Succeed he has.

Ghodsi is no longer corresponding with clients from his bedroom, but rather from a plush leather chair at his north Houston corporate headquarters flanked by framed diplomas, awards and media reports detailing his success.

As owner and executive vice president of Rigid Building Systems, he employs more than 700 workers—roughly 100 of whom are professional civil engineers—to design and build everything from schools to airplane hangars that are shipped all across the world.

Alumnus Alex Ghodsi stands in the warehouse of his business, Rigid Building Systems. The company, which he started with a friend nearly 20 years ago, was ranked number one for six consecutive years by the Houston 100—a ranking of private businesses making great economic impact in Houston—for overall job growth.

Photo by Thomas Shea



By Erin D. McKenzie



Photos by Thomas Shea

**C**arlos de Aldecoa Buenos' (1997 BSIE) family tree branches back to Spain where his grandfather helped deliver thousands their morning jolt with his coffee roasting business.

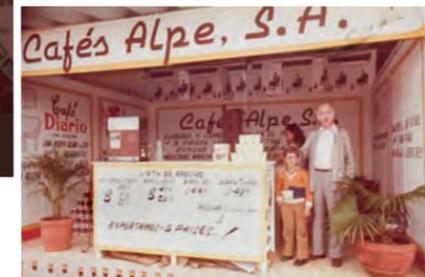
Decades later, the business expanded to Mexico where the future University of Houston graduate was groomed for a career in coffee before Buenos' parents carried the family trade to Houston.

Now the third generation to nurture the venture, the 35-year-old has taken tradition one step further.

He not only spearheaded an effort to amend the Texas constitution to exempt green coffee from inventory tax that once hindered industry growth, but also acquired and now runs North America's largest integrated roasting, decaffeination, soluble processing and packaging facility.

"My family history in the coffee business is a three-generation legacy," said Bueno, who is president of Maximus Coffee Group and its bulk handling sister company, Cadeco Industries. "It's been my dream to secure that family legacy through continuing and building our tradition of excellent quality and superior relationships."

Coffee, the world's second leading traded commodity, is now big business in Houston thanks to Bueno—who secured New York Board of Trade designation for Houston as a green coffee and raw cocoa exchange port in 2003.



"We are well on our way," Bueno said of his plans to expand on what his grandfather started. "Houston now holds about 25 percent of the U.S. coffee stocks, where before it maybe held about five percent."

The success of his family's coffee business and the growth in Houston, Bueno said, has always been hinged on a willingness to adapt to change and embrace new ideas.

For Bueno, one of the biggest adjustments for his company came just three years ago when he purchased the Maxwell House plant from Kraft Foods. He's engineered the operation, he now calls Maximus Coffee Group, to serve as home to the largest natural decaffeination operation in the country.

"There are different methods for removing caffeine from coffee beans, but most require the use of chemicals," Bueno said. "We are decaffeinating using supercritical carbon dioxide and ultra-pure water. The method is not only effective at removing the caffeine in the shortest amount of time, but it is chemical free and has no environmental impact."

As he continues to implement methods such as this to streamline his operations, Bueno remains centered on securing the area's importance as one of the major coffee industry centers in the United States.

Class Notes

1970s

**Ebrahim "Abe" Fatemizadeh** (1972 BSIE, 1974 MSIE) was honored by the UH Department of Industrial Engineering with the inaugural Texas Industrial Engineering Lifetime Achievement Award.

1980s

**Vinod Shah** (1980 MSIE) was inducted into the UH Department of Industrial Engineering's Academy of Distinguished Alumni.

**Joseph R. Zinecker** (1982 BSEE, 1985 MSEE) was promoted to director of the Future Combat Systems MULE Program at Lockheed Martin Missiles & Fire Control. The MULE Program is the largest combat robot development project in the world, aimed at developing three variants of a 3.5 ton autonomous high-mobility robot.

**Roman Wolff** (1983 BSChE, 1987 MSChE) was appointed chief technical advisor for Neohydro Technologies Corporation. He is the founder and president of Enhanced Biofuels Inc.

**Randal Sitton** (1985 BSChE/BSIE, 1988 MSIE, 1992 PhD IE) was inducted into the UH Department of Industrial Engineering's Academy of Distinguished Alumni.

**John S. Grounds III** (1986 MSCE, 1988 PhD CE) was inducted as president of the Texas Floodplain Management Association.

**Steven Stanley** (1988 PhD ChE) was named vice president of commercial business at Univation Technologies—a joint venture between ExxonMobil Corporation and The Dow Chemical Company.

1990s

**Richard Schuhmann** (1993 MSEnvE) was named a co-recipient of the W. LaMarr Kopp International Achievement Award for faculty at Penn State. He is an assistant professor of engineering and the director of the Engineering Leadership Development Program at the university's College of Engineering.

**Anita Bargas** (1997 BSME) welcomed a grandson, Adrian James Bargas, on April 30, 2009.

**Carlos de Aldecoa Bueno** (1997 BSIE) was inducted into the UH Department of Industrial Engineering's Academy of Distinguished Alumni.

**Brazilia Vela-Garcia** (1997 BSIE) was inducted into the UH Department of Industrial Engineering's Academy of Distinguished Alumni.

**Alfred Castillo Jr.** (1998 BSCE, 2002 MCE) was named turnaround manager for site services maintenance at St. Charles Operations, a subsidiary of The Dow Chemical Company.

2000s

**Brian Daly** (2002 BSChE) is now a senior engineering specialist at Samsung Engineering America.

In Memoriam

**Harry Grenader** (1950 BSME) passed away June 11, 2009.

**Adin Hall** (1956 MSIE) passed away Jan. 5, 2009.

CIVIL ALUMNI HONORED

**Kristin White** (2007 MCE) and **Krishna P. Jonnalagadda** (2003 MSEnvE) were among 16 recognized recently by area professional organizations as their 2009 Young Engineers of the Year. The Houston-Galveston Post of The Society of Military Engineers honored White, a project manager for Dodson & Associates, and the Texas Society of Professional Engineers honored Jonnalagadda, a senior project professional with Fugro Consultants Inc., during National Engineers Week (Feb. 15–21).



Photo by Thomas Shea

# Inspiring Dreams

By Erin D. McKenzie

**Cynthia Oliver Coleman** (1971 BSChE) has dedicated the majority of her life to advancing women and minorities in engineering.



Photo by Thomas Shea

Coleman is the first African-American female to graduate from UH with a chemical engineering degree.

Her commitment to their progress has taken her from University of Houston Black Alumni Association board member to mentor for the Society of Women Engineers. She has sat on minority scholarship committees and worked to inspire youth by sharing with campus organizations and Cullen College of Engineering summer camps, her tale of perseverance in a traditionally male career.

In August, she will add president of the UH Engineering Alumni Association to her legacy of service—a year term she will dedicate to reconnecting more Cougar engineers with the university that changed her life.

“Being at UH became a life-altering experience for me,” said Coleman, who met her husband at UH, and later watched both her sister and her own daughter become Cougars. “UH is part of me. I want to find many more ways for alumni to be involved with their university and help UH to reach Tier One.”

The push for involvement, Coleman said, was motivated by UH President Renu Khator who names alumni

participation among the initiatives that will aid her in reaching the goal to make UH a nationally-competitive, Tier One institution.

A licensed professional engineer who is now retired from ExxonMobil Corporation, Coleman sees the effort as just one more way she is paying it forward.

Coleman, who grew up in Houston’s Third Ward, became the first in her family to attend college in 1967. A love of chemistry and math steered her toward engineering, a decision she learned early on was far from easy.

“With me being the only girl and only black in class, there was not really anyone to talk to,” she remembers. “Everybody was kind of like ‘she is here, but she is not going to come back next semester.’ I was saying the same thing.”

That was until the start of her junior year when she met Professor Frank Worley, her advisor.

“He seemed to be sure that I could do it when no one else was,” she said. “He encouraged me to stretch more than I thought I could and prepared me for

striving and trying when you don’t think you can do it.”

In 1971, she became the first African-American female to graduate from UH with a chemical engineering degree. This milestone and Worley’s encouraging words would carry her through her next challenge—a workplace devoid of women.

“I found myself in a similar situation that I had encountered at UH by me being the first woman engineer in Exxon’s East Texas division,” she said, noting it would be nearly a decade before more women trickled in.

These experiences are why she has devoted her time to more than 10 organizations and committees at the university and across the Greater Houston area.

“I always wished to see another woman engineer, but I could rarely find one,” she remembers of her time at UH and later at ExxonMobil. “I find myself volunteering so that I can be around for other students who might wish that they could see one, talk to one. It’s just me kind of giving back what I wish I had had.”

# iSpy: Campus Infrastructure Challenge

Our feature, "Securing Our Systems: Confronting the Infrastructure Crisis," spotlighted our country's aging infrastructure and the need to invest in it to ensure we remain prosperous and our modern lives continue moving forward.

Investing in the future with infrastructure is not unlike what is happening at the University of Houston, where administrators are devoting time to building programs and adding the infrastructure necessary to grow a better, top tier university.

In the last year alone, UH has added new degrees, minors and departments. This is in addition to bricks and mortar—Calhoun Lofts, a new living option for graduate and professional students and a new parking garage, which will be ready later this year.

Yet, in spite of the ever-changing face of the campus, there are many pieces of

infrastructure that tell the story of how the university and the Cullen College of Engineering came to be where they are today.

We have made a point to highlight these as well as some of the newer additions in the photographs below. Offering only small glimpses of what each represents, these photographs are designed to test your knowledge of structures around campus.

When you think you have figured out what and where these structures are, submit your answers to [cougarengineer@uh.edu](mailto:cougarengineer@uh.edu) or mail them to the address on the back cover for a chance to win a brand new iPod touch courtesy of the UH Engineering Alumni Association.

Entries must be received no later than Oct. 16, 2009. A complete list of the answers as well as the winner will be shared in the next issue of the magazine.

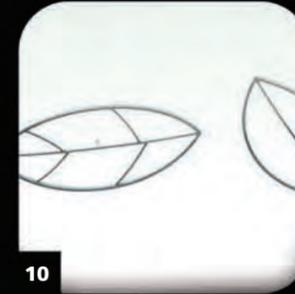
Enter to win:



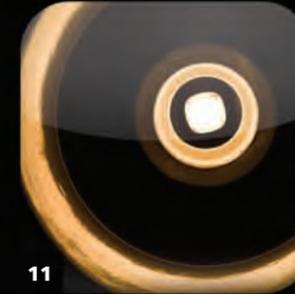
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Deadline:  
Oct. 16, 2009



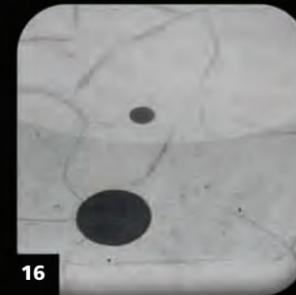
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A complete list of the answers as well as the winner will be published in the winter issue of *The Cougar Engineer*.



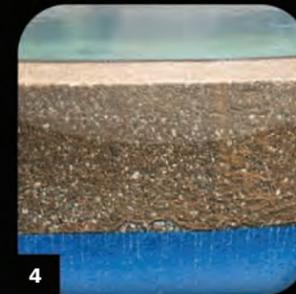
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Photos by Thomas Shea

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Photo by Thomas Shea

**Gabriel Cuadra** (1988 BSChE), **Michael Harold** (1985 PhD ChE), **Duane Germeris** (1983 BSME) and **Daniel Wong** (1983 BSCE, 1985 MSCE, 1988 PhD CE) show off their awards at the Engineering Alumni Association's Distinguished Engineering Alumni Awards Dinner in June. To view a slideshow and read about the honorees, visit [www.egr.uh.edu/cougarengineer](http://www.egr.uh.edu/cougarengineer).