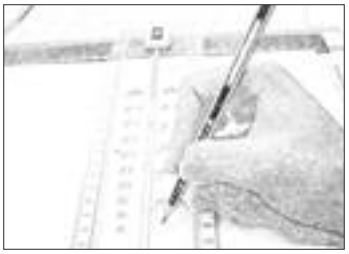


Engineers And Planners Will Lead The Effort To An Improved Infrastructure.

Here are profiles of engineers working in the civil/structural discipline:

BY PETER HILDEBRANDT

KEVIN EDWARDS, ENGINEER, BECHTEL

When Kevin Edwards, now an engineer with Bechtel, was in grade school and high school he had some interest in engineering, but few mentors were there to guide him. He entered advanced placement courses in math and science as early as ninth grade, continuing this path through high school, where he surrounded himself with individuals who had a similar background in math and science.

Many of his high-school friends with whom he maintained relationships with went on to be engineers. Edwards looked at colleges with strong math and science programs when the time came, but he left high school unsure of what road to take and how difficult the path could be. He attended a pre-college summer program after graduating high school, something he considers one of the best things he's ever done, which allowed him to adjust to the college lifestyle and the new academic program.

"I decided to follow the dreams of my friends and entered an engineering program," recalls Edwards, who received a full engineering scholarship to Rutgers University. During his second semester, he declared mechanical engineering as his major. Again, he had no introduction to that field, no mentors able to guide him, and had simply spoken to his friends from high school who had chosen that discipline for their major. But when he found himself in a computer aided design (CAD) thermodynamics class for students entering into the mechanical engineering program, he wondered if engineering fit him.

"When I approached my guidance counselor and others at that time, they told me I had what it took to be an engineer and needed to discover what I wanted to do," remembers Edwards. "Industrial engineering seemed best suited to my interests and I graduated with a bachelor's of science in this field from Rutgers University, making Dean's List several times." Edwards came from a single-parent household and was the first person in his family to graduate from college.

He took advantage of on-campus recruitment and secured his first position as an assistant engineer at the New Jersey Department of Environmental Protection. While there he entered into a master's program in environmental engineering at Stevens Institute of Technology in Hoboken,

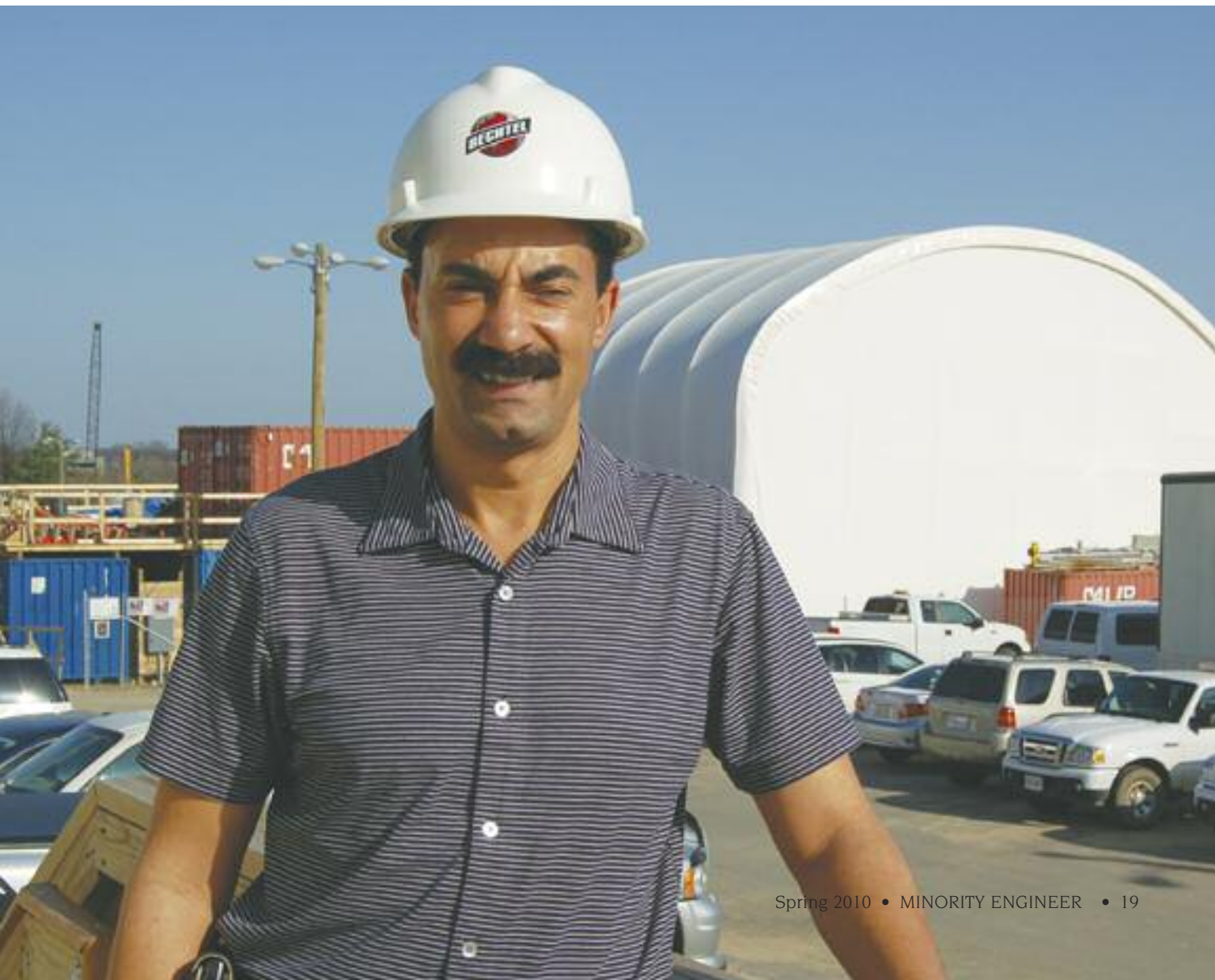
NJ. "There was something about being able to work with the environment and maintain flexibility in engineering as well as working with consultants, clients, and a team to solve problems that appealed to me," he declares.

When he saw a position with an engineering consulting firm in a newspaper advertisement, he applied and received the position. After ten years with that firm, he decided, based on experience he gained in telecommunications, to work with Bechtel. Again, he answered a newspaper ad and went in for an interview and got the job.

Edwards is interested in giving back to the community. He's involved in the National Society of Black Engineers (NSBE) and is Bechtel's management representative for the organization. He especially likes to help students in elementary school all the way up through high school to prepare to make decisions so their experience will be easier than his. Edwards works on pre-college initiatives with students— teamwork aspects so they understand what it's going to be like in college and after college.

"Establishing the alumni chapter of the NSBE in Frederick, MD, and involvement in their activities helped me understand how to direct people who may go into engineering," says Edwards. "I've learned how to network, how to grow from the standpoint of a leader, how to take chances, and be proactive or creative. These attributes fit Bechtel, which encourages individuals as engineers to be proactive, creative, and geared to team efforts."

Kevin Edwards is an engineer working at Bechtel.



He continues, "I'm a better leader and functional in other roles aside from engineering. At Bechtel, I have several informal mentors I've met, grown, and bonded with through my ten years here, which has helped me understand my next steps and has broadened my area beyond what I originally started out. I am working on a civil engineering project right now. Engineering is an excellent field to be in, it's rewarding and there's much variety in the field, especially at Bechtel.

What is Edwards's advice to other engineers? "I try to say to the other engineers, 'don't look for something to be given to you.' My lifelong perspective has been to work two, three, or four times harder than anyone else because it's what I want to do. This job is my passion. I don't do it competitively but because this is what I'm used to doing. We all need to pursue every assignment and challenge in that manner if we want to have a successful career. Give it your all—give it your best. Successes will come based on your performance."

CORDELL SEALS, MECHANICAL ENGINEER, THE SHAW GROUP

Cordell Seals, mechanical engineer with The Shaw Group Inc., was born and raised in Mobile, AL. Seals decided he wanted to be an engineer in the fifth grade. "An older brother of a kid I walked home with was about to graduate high school and said he was planning to study mechanical engineering once he got to college," recalls Seals. "I liked how it sounded, so I said that's what I would do. As I grew up, I found I was good at math and science, and engineering seemed like a good fit. I scored well on the standardized and advanced placement tests and felt I was suited for it."

Seals enrolled at Louisiana State University and during the school year and summer breaks, he worked various jobs to support himself. A few of those summers he was also enrolled in summer classes. "All those jobs showed me a couple of things," remembers Seals. "They revealed that to succeed I'd have to work hard for what I wanted, but also showed me that there were jobs I did not want to do for a living and environments in which I did not want to work."

Seals earned his bachelor's degree in mechanical engineering in 2003. When he was looking for his first job, he not only attended the career fairs at LSU, but also would drive to different college campuses to attend their career fairs, sometimes on back-to-back days. As a result, he got his first interview and ended up getting the job. Summer jobs and internships aside, Seals had no direct industry experience when he graduated college, but he felt like he was able to learn anything.

"In my first job out of college, I wasn't even working in mechanical engineering," he remarks. "I worked as a pipe stress engineer in the piping department of a company. I never studied for that job, but I learned on the job and grew as I went. I wasn't afraid of the job. I told my supervisors I could learn the job and I did."

Since graduating and beginning his professional career, Seals worked mainly in consulting firms, on industrial, corporate, and government projects. Being willing to go outside his comfort zone, showing confidence in himself and his abilities, and having a willingness to learn were all skills that have helped him in is career. He also says that networking and personal presentation are important. When you meet someone, you want to stand out to that person. You have to be able to sell yourself while being yourself."

When you start to look for a job, be prepared for the chance of people or companies to say no that you weren't selected for the job. "In general, it's not a personal slight or mark against you," adds Seals. "So don't take it that way. Just thank them for their consideration, then be persistent, and keep applying elsewhere. All you need is for one person or company to say yes. Do not be afraid or intimidated by what you may think you lack. If you possess the skills and abilities that company looks for, go for it. It's not a guarantee you'll get it, but it's a sure bet you won't get it if you don't go after it. When you first start out, be open to opportunities. And then, stay that way."

Seals advises jobseekers that we shouldn't turn down an opportunity without evaluating the positives and negatives. "It's great if someone wants to pay you buckets of money, but be sure to evaluate if you can handle all the things that go along with the job such as possible longer commute times, being away from home a lot, or longer hours," he notes. "Be courteous to everyone you meet in your daily life and don't make a habit of 'burning bridges' with people. In some engineering fields, you find that it can be a small world. Someone who was once a classmate could end up being a colleague. Someone who was once a colleague could end up being a prospective client or vice versa."

Seals suggests that you interview the people and company interviewing you. As you tell them about yourself, ask them about themselves and the corporation. Ask for more information about your potential responsibilities, their current and future needs, how the company handles training for their employees (so you can grow), and what the career paths and advancement opportunities are within the organization. Try to evaluate the company's environment and where it's headed. Is it going in a direction you also want to go? Do you see yourself developing and growing there over a long time?

"When I look around Shaw, I like that I see younger

and older people, men and women, and people from all over the world" Seals comments. "I like that there are always people who have experience and know-how who are willing to share what they know with those of us who get into the field and learn our way around. I have had the chance to work and converse with people who have just as many differences as commonalities with me. Learning to cultivate leadership and subordinate skills—you have to know how to work within a team, how to direct, and how to follow direction—are important aspects to consider as well."

According to Seals, it's also important to continue to add to your knowledge base. He recently passed the Fundamentals of Engineering exam and plans to take the PE exam later this year to become licensed as a professional engineer.

Doing quality work and being willing to provide the services the company needs, such as traveling for assignments or volunteering, helps you grow in your career while helping others. Seals participated in Shaw's annual "Introduce a Girl to Engineering" day, coordinated by Shaw's diversity manager, a program designed to promote the engineering and science fields to female high-school students as they make their career plans.

JEREMY R. WATSON, ASSOCIATE ENGINEER, PARSONS CORPORATION

Jeremy R. Watson, an associate engineer with Parsons Corporation, is originally from Jacksonville, FL, and is now based in Washington, DC. Jeremy earned his bachelor's degree. from the University of Florida in 2008, majoring in civil engineering with a minor in urban planning.

"My interest in engineering began early," states Watson. "I had an erector set as a child and loved all the nuts and bolts and the ability to build whatever I wanted. This passion continued in high school where I took a CAD course, my first real exposure to design. Our final project was to develop plans for a house, generate a 3D model of it, and develop a video giving a tour of the house. This was the one class that I enjoyed. At its conclusion, our teacher gave us a list of professions where CAD is used heavily. From then on, I knew what I wanted to pursue in college."

Watson found the University of Florida a great fit with its engineering program, including its support systems in place for all students, but especially for members of minority groups. The university has both a successful transition through an enhanced preparation for undergraduate program (STEPUP) and engineering freshmen transition program (EFTP). They differ in duration, but allow students to get a head start on engineering courses over the summer.

The programs also provide opportunities to meet professors and deans as well as opportunities to meet other engineering students. "This opportunity was life-saving because when it's 3 a.m. and you are still trying to finish a homework assignment, you can't call your professor but you can call a friend in class who is most likely still up doing the same thing," remarks Watson.

He adds, "My education was important because it helped me to determine in which area of engineering I wanted to focus. By that I mean, the courses that I disliked and that I dreaded going to were the areas where I had no interest in working whatsoever. Nevertheless, I at least have some background knowledge to be able to understand those topics when they are discussed now."

Watson completed an internship every summer that he was in school, except for one in which he did research. He feels internships are important. "I recommend interning for different companies because experiences differ by company, by office, and by location," advises Watson. "I interned on the private and public sectors. Also, I kept in contact with project managers with whom I interned. Not only did I have multiple contacts in the field, but I also had legitimate experiences to build on once I returned to school and to discuss with recruiters when it was time for me to apply for a full-time position."

He considers professional organizations to be an effective way to join a company. "I was active in the National Society of Black Engineers chapter while an undergraduate and there I learned the importance of attending the conferences, networking, and then being able to sell yourself. You hear these suggestions all the time and from my experience they are all true. I also believe in the 'follow-up' after an initial contact or interview."

Diversity is actually one of Parsons's core values, which means the company is committed to diversity at all levels, not only diverse employees but also diverse customers and geographic locations. As far as hiring goes, Watson says Parsons has excellent relationships with minority engineering organizations such as NSBE, SHPE, and SWE. His current position actually came through a Parsons recruiter he met while at a NSBE conference. In maintaining diversity, Parsons has mentoring through its global talent initiative and also new hire sponsors.

At Parsons, every new hire is assigned a sponsor to show him or her the basics, how to log on the computer, access applications, where the coffee room is, etc., which goes a long way to just get acclimated to a new environment. "It's also important to note what Parsons does to keep young professionals," Watson continues. "In this field, it is extremely common to work for a company for two to three years and then leave. One thing that Parsons does to combat this trend is the early career professionals (ECPs) program, a group of recent

graduates and employees who are two to three years removed from school. Here in Parsons's Washington, DC, office, we meet once a month for a luncheon and a senior manager speaks at each one. We are connected by teleconference to ECPs all over the country. So we get exposure to management and also get to socialize with more employees who are around the same age."

For new graduates searching for work, Watson recommends setting goals. "What are your top choices for jobs? Where are your top locations? What is the best and most realistic salary that you can earn with your experience?," he asks. "From these, you at least have criteria from which to compare. It's important to understand that, especially now, you may not be able to get your dream job right out of college. You may have to accept a lower salary or take work in a location that was not on your list. While those thresholds are different for each person, it's important to know where yours are."

Cordell Seals, Mechanical Engineer, The Shaw Group

Watson suggests candidates from fields other than engineering consider a graduate certificate to get started or to dive in completely and pursue an engineering degree. If you currently work for an engineering firm but not on the engineering side, ask about the projects and what's involved; ask to look at old projects. Many times old CAD files remain on servers so a project that has been submitted is a great opportunity to look through the work and see what actually goes on to complete the project.

When asked about job discrimination, Watson says it's a tough call. "What is the threshold? They are individual to each experience. In the case of on-the-job discrimination, first and foremost make sure all your "i's are dotted and t's crossed. It's hard to make an argument for being passed over when your performance is not stellar. Second, inquire about the decision made. Ask your manager, 'Why was I not chosen for the position? What else should I be doing? How can I better my chances for the next opportunity?' Third, evaluate the information. Do you believe and/or accept the reasons given to you?," he declares.

Watson continues, "Other than race, do you see reasons where there could be a basis for the decision? After evaluation, then you must decide the best course of action, whether to address corporate level management leave the company. Discrimination during the job application process is also tough to deal with because you never really know. All you can do is to make sure that on your end you are the best candidate for the position and apply and also stay motivated. In either case, show how you will produce results. Either highlight how you have helped the company to achieve the bottom line or how you will do that if hired. That way, in a worst case scenario, the work you have done, results achieved, and experience gained is what you can take with you if you leave and will only help open the door for your next opportunity."

To advance in engineering, college experience is absolutely necessary, and these days, a master's degree is becoming the norm, according to Watson. "Upward mobility is the goal, but it's honestly about more than just the work," he says. "In everything, there are politics involved. So interpersonal skills come into play again, but beyond that a rule that I follow is to prepare for your next role before you get to that role. If you want to become a project manager, ask your project manager about what he or she does. Look at your role in the project. Who are all the players and what are their roles? Make sure you understand the big picture. Also, don't be afraid to ask questions. It's better to understand up front than to waste hours and have

Jeremy R. Watson, Associate Engineer, Parsons Corporation

to redo the work."

Watson notes that the outlook for engineering in general is great. Engineers solve problems in a multitude of areas, and as technology advances so will the field. Civil engineering specifically, is a great field to join. Infrastructure is the buzzword right now. Buildings, bridges, roads, and water systems all need to be replaced, improved, expanded, or maintained. "Jobs are not falling out of the sky at the moment; however, our infrastructure is due for a massive update. Engineers and planners will lead that effort."

MARINA PERIERA, ENVIRONMENTAL ENGINEER, CDM

Marina Pereira works for CDM as an environmental engineer in Cambridge, MA. She did not realize she wanted to pursue environmental engineering until she was a senior in high school. "I wasn't sure what it meant aside from the fact that I liked the environmental path," she recalls. "I was good in math and a teacher told me that environmental science would be good for me, but added that if I wanted to earn more money, I should go into environmental engineering."

In 2001, Pereira enrolled at the University of Massachusetts-Dartmouth for its civil engineering program with a focus on the environment. Before she graduated in 2006, she chose to complete a one-year co-op during her junior year. The co-op track required that the candidate work for at least one year. In one of the summers, she worked in the Massachusetts Water Resources Authority and then worked for J. Cashman, a marine construction company, before coming on with CDM, which had also been her longest co-op experience.

"Most co-op students come and go in a six-month period," says Pereira. "But I chose to do mine back to back, which was good because I got to look at projects from beginning to end and people knew I was going to be here for a whole year so they trusted me with more tasks. That worked out well. This internship may be among the reasons I was hired here. The company felt it was worth the investment in time and training me as it knew I was going to be here for a full year. It's advantageous for a candidate to have the opportunity to do back to back co-ops or increase the length of their time that makes them more marketable when applying for positions."

When Pereira graduated in 2006, she knew exactly what she wanted to do because she had already had her co-op experience. She went directly into a program to earn her master's degree in environmental engineering from UMass Amherst. She was able to attain this degree in one and one-half years because she was able to take a few graduate classes during her senior year of college. While working toward her master's degree, she completed a research assistantship enabling her to work at the lab.

While working toward this degree, Pereira participated in an Engineers Without Borders project in a village in the Amazon River Basin in Brazil. She and a few other students founded the project and it involved traveling several times to do assessments.

Her work at CDM involves a great deal of time with sewer system overflow problems, the distribution system, or infrastructure and storm water management. She works with water system designs and many multidisciplinary projects working with modelers in water resources and other consultants. Currently, she works on a proposal for cleaner process technologies, something somewhat out of her area. "I like being involved with diverse projects," explains Pereira. "I am relatively young and don't want to close myself into one niche. I try to explore as many possibilities as I can within civil and environmental engineering. Environmental management is starting to play an important role in business management. Pollution is pretty much wasted resources and wasted money; companies are increasingly starting to realize this fact."

Marina Periera, rear center, environmental engineer, CDM

Pereira adds that she may have underestimated the amount of communication and writing skills involved in the role of an engineer. "I had the impression of being in a cubicle doing designs and crunching numbers," she declares. "But the job is beyond that. There is a great need for management and communication skills. Engineers still have to be able to talk to the clients and to enforcement agencies such as the EPA as well as the public."

Pereira is active with the New England Water Environment Association on its scholarship committee and the Humanitarian Assistance Committee. Pereira does whatever she can to be involved with the Massachusetts Chapter of the American Council of Engineering Companies. "I find that the more people who are in the field and who are involved with associations, the better the networking that results. For students looking for jobs, going to workshops and presentations opens up a lot of networking as well as job opportunities," she advises. **ME**