EDITOR'S NOTE

Charles T. Jahren
Iowa State Univ., Construction Engineering Program, 458 Town Engineering Bldg., Ames, IA 50011-3232. E-mail: cjahren@iastate.eud

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So exactly how do you build a deep concrete foundation for a suspension bridge in the middle of a bay, or maybe a strait where workers will have to battle currents, waves, and challenging foundation conditions? Remember that the stakes are high because the bridge is necessary to provide a critical link for transportation and commerce that will benefit millions of people. Pondering this question launched many into rewarding careers in construction engineering and management, including this editor. The resulting structures are useful, and, in many cases, attract visitors in their own right. It's the stuff that we need to think about when our life seems to be all about the next RFI, change order, or petition for curriculum modification.

A month after celebrating this journal's diamond jubilee, we honor Ben Gerwick, a construction engineer who answered questions like these and in the process inspired many. The tributes published herein reveal that he did it with tireless enthusiasm, humility, and a willingness to take risks. Not only did he have the knowledge and imagination to develop engineering solutions to challenging problems, he also had the management skills to draw people together as a team and touch many people in a generous and personal way. Let us honor Ben's memory by striving to approach our endeavors in a similar way.

Fig. 1. Ben C. Gerwick

Memorial to Ben Clifford Gerwick, Jr.

Ben Clifford Gerwick, a world renowned civil engineer specializing in construction engineering who has advanced the field in both the professional and academic sectors passed away peacefully on December 25, 2006 at home of complications from a lung infection with family members present. Born February 22, 1919 in Berkeley, he graduated from Berkeley High in 1935 and received a B.S. in civil engineering from UC Berkeley in June 1940. Ben served in the Navy from 1940–1946. While in the Navy he achieved the rank of commander, serving in the Atlantic, Mediterranean, and the South Pacific. He concluded his service in the Navy as the Commanding Officer of the U.S.S. Scania. He then returned to work in his family's construction company, Ben C. Gerwick Inc., a marine and construction firm, working his way up from field and office engineer, to vice president, and then president of the firm in 1952. He joined the Berkeley Civil Engineering faculty in 1971 establishing a graduate academic program in Construction Engineering and Management.

Ben was preceded in death by his first wife of 54 years, Martelle Beverly Gerwick, whom he married July 28, 1940 in Bronxville, N.Y. He is survived by the children of this marriage: Beverly Brian of St. Joseph, Mo., Nurse Practitioner, and her children Bevan Brian and Peter Brian; Virginia Wallace of Bainbridge Island, Wash., Bank Officer, and her daughter Darcy Wallace; Clifford Gerwick of Indianapolis, Senior Research Scientist, Dow Agro Sciences, and his children Wendy and Jack Gerwick; Bill Gerwick, Professor, Scripps Institute Oceanography, UCSD, and his children Jennifer and Erik. Additionally he is survived by his second wife Ellen Chaney Gerwick and two sisters Jean Morken and Betty Miller.

Gerwick developed a broad range of technical specialties required in the fabrication of modern bridge, marine, and offshore structures. These include innovations in deep foundation construction, prestressed concrete, underwater Tremie concrete, offshore structures including concrete cryogenic containment, and corrosion protection for concrete reinforcing steel. His later research activities centered on problems encountered in the construction of concrete ocean structures in the hostile Arctic and North Sea environments. His research findings have been quickly implemented into field construction practices often resulting in large financial savings. He had the important ability of seeing and understanding the total project and the interdisciplinary nature of the expertise needed from many different specialties to accomplish the final goal. Several examples of these innovations and their adaptation include

- Slurry-trench concrete diaphragm wall construction method for permanent support of underground excavations, used on the major BART stations in San Francisco, also major buildings and cut-off walls for dams;
- Concrete gravity-base offshore concrete structures, used for 20 deep-water offshore platforms in the North Sea and one in the Arctic. The Hibernia platform off the coast of Newfoundland is designed to resist iceberg impact;
- Underwater concrete construction methods, enabling high quality construction without dewatering and adopted by the Federal Highways Works Administration for all bridges. This was applied on many major bridges, e.g., the Columbia River Interstate 205 Bridge in Oregon, the Dame Point Bridge in Florida, and for offshore platforms, one at the depth of over 800 feet off Australia;
- Floating concrete structures, such as a floating concrete LPG

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terminal in the Java Sea. Integration of prestressed concrete technology with Naval Architecture; application to such bridges as the third Lake Washington floating bridge and the replacement Hood Canal floating bridge, both in the state of Washington; and
- Concrete armor plating of man-made islands in the North Sea. A technology proven in test facilities at the Richmond Field Station.

Gerwick's activity in the broader area of technology transfer began before his appointment to the faculty when he became president of the Prestressed Concrete Institute in 1958. During his appointment, he greatly expanded this effort, becoming president of the Foundation Internationale de la Precontrainte from 1972 through 1976. (He is the only American to hold that honored position.) Since his election to the National Academy of Engineering in 1974, he has been an instrumental member of important national committees serving as
- A member of the Marine Board of the National Research Council from 1975–1981, and as chairman from 1978–1980;
- A member of the Polar Research Board, National Research Council from 1983–1986; and
- A member of the Commission on Engineering and Technical Systems, National Research Council.

Ben was an outstanding teacher who attracted students from many disciplines in the broad field of engineering as well as students from related fields such as geology. Professor Gerwick offered his students a unique perspective on problem solving based on a multidisciplinary approach, which served to ensure that no critical aspect of the proposed structural solution was overlooked.

As a lecturer he was able to bring to his students the reality and processes of how to solve complex interdisciplinary problems in large-scale construction projects. Professor Gerwick had the uncanny ability to take very complex subjects, including the construction of marine structures, and make the approach to them appear natural and straightforward. He was unusually effective in enabling the students to not only understand the basic concepts, but also to independently think through their own approach to unique situations. In his many lectures to students and professional groups, he stressed the inclusion of a creative and innovative attitude in addressing engineering and construction challenges.

His students often remarked on his warm and friendly personality and on the keen interest he took in their welfare and professional development. An exceptional researcher, he was able to convert his knowledge in terms readily understood by all his students. Seventeen doctoral students completed their degrees under his supervision and are now leaders in the technical areas he developed.

Forced to retire in 1989 at the age of 70, Professor Gerwick continued to teach, on a recall basis, in the academic program he founded, until his health failed. During his over 30 years association with the graduate program in construction engineering and management, he was an inspiration to hundreds of graduate and doctoral students.

Professor Gerwick received numerous awards and recognition from professional and national societies world wide. The extent of his international reputation is evident from a purview of these honors and awards. Several are worth special comment.
- His ASCE awards include: Martin S. Kapp Award, 1976; Honorary Member, 1985; Peurifoy Construction Award and President's Award in 1989; Distinguished Constructors Award, 2000; ASCE Outstanding Lifetime Achievement in Construction Award, 2001; and the Ralph E. Peck Lecture Award, 2001;
- He received the Golden Beaver Award for Engineering in 1976. This is the Western United States Construction Industry's highest award;
- Awarded the Emil Morshch Medal, the highest award of the German Concrete Society, at the biannual meeting in Berlin on April 25, 1979. The citation was for pioneering developments in the utilization of reinforced and prestressed concretes for ocean structures and leadership in international concrete activities; and
- Awarded the Freyssinet Gold Medal at the IX Congress of the International Federation of Prestressing (FIP) in 1982 for his work in extending the application of prestressed concrete to marine and offshore structures in the North Sea and Arctic. This is the organization's highest honor.

Ben Gerwick still had time to enjoy nonprofessional activities with his family. He spent personal time individually with each of his children helping them develop their own personalities and interests. Ben Gerwick introduced his children to tennis, fly fishing, hiking, bird watching, pheasant hunting, the love of gardening, the symphony and the other arts, and his passion for literature. Friends referred to him as gracious, dignified, and a real gentleman.

A graduate student fellowship in Professor's Gerwick's name is being planned by the Department of Civil Engineering at Berkeley.

Tributes to Professor Ben C. Gerwick

I had the privilege of collaborating with Ben as he initiated his academic career with the establishment of the construction engineering and management graduate program at the University of California, Berkeley. I had attended seminars given by Ben while a doctoral student at Stanford. I knew at the inception that this was to be an exceptional experience. Ben brought vitality to the program that had to be experienced to really appreciate.

Initially he was instrumental in the development of a curriculum that emphasized the "engineering" part of the program's title. His expertise and collaboration with all of the various divisions within the Civil Engineering Department created a multidisciplinary environment from which our students could explore their engineering interests. These specialties included construction materials, soils and deep foundations, ocean and offshore structures, structural design, and prestressed concrete. In his research, Ben and his students made important advances in these fields, as noted in the memorial article.

He involved his students in projects based on his professional experience, thereby giving them a taste of real field engineering problems and the range of potential solutions. Contacts with many of his graduates who have advanced to significant levels of professional responsibility indicate that his emphasis on complete analysis of a problem and the surrounding environment has equipped them to become leaders. Students as a team solved these proposed field problems and were required to make professional presentations to him as he played the role of the owner or other principal party. I still envision student teams dressed in suits or suitable business attire waiting their turn to demonstrate their solutions. As one senior employee at the university remarked, "they already look like professionals." Indeed, it was always Ben's goal to train engineering professionals.

As the memorial article demonstrates Ben had many successful careers, but I believe that his academic career was the most

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significant for the future of the construction industry. Here he created an army of individuals as dedicated as himself to engineering advances in this industry. I miss him but realize that his students or more likely "his disciples" miss him even more.

— *Keith C. Crandall, Ph.D.*
Professor Emeritus, Department of Civil and Environmental Engineering, University of California, Berkeley.

Years ago, when I was a young engineer, I was scheduled to give a case history paper just after Ben. The conference was in San Francisco, so Ben was speaking in his own home court you might say. The room was packed with over 600 attendees and when he was finished I was introduced and inherited his 600 listeners.

I had just come to this country having only been here about 1 month. I had not done a lot of public speaking at the time, and I remember being extremely nervous in front of such a large crowd. I quickly lost my place, and must admit that I considered, for a second, running from the stage. However, I didn't and managed to finish the presentation.

The next evening by complete accident I ended up sitting beside Ben at a dinner. I had never met Ben before but to make conversation I suggested that he probably didn't get nervous in those types of situations.

He said "Are you kidding, I was scared. Do you know who was in that room? If you made one false statement they would crucify you."

He went on to say "I probably don't get nervous in a lecture but a day like yesterday is different."

Up until then I don't think he had recognized who I was, and when he did he said "Oh, you're the young man who spoke just after me aren't you? I heard your talk and you had some very good points which I used in my class today."

I took that as one of the kindest things anyone had ever said to me and it epitomized the way I will always think of Ben.

Several years later he was hired to give credence to a value engineering proposal that several of us were making to a State DOT. Our group made our presentation—Ben, didn't say a word. The DOT reviewers looked a little unimpressed but said to Ben, "What do you think?"

Ben said "It's a good idea."

Four words, that's all he said during the whole session. The idea was immediately accepted. I have no idea how much Ben was paid for that session but I always thought that his compensation was probably the highest pay per word I had ever seen.

I used to see Ben regularly at conferences and events and he never failed to stop and talk to me about personal issues and my career.

He was a marvelous man and to me something of a mentor. I feel fortunate to have crossed paths with him.

— *Alan Macnab, P.Eng.*

Professor Ben Gerwick will always be remembered as a great teacher with vast practical experience. His courses in marketing, deep excavation, and marine and offshore construction were main differentiators between the graduate construction management program at Cal and all other schools. They covered a wide spectrum of topics and were largely a channel for Professor Gerwick to share the wealth of his experience with the students. He made sure to listen carefully to every question and provide detailed illustrative answers. His office was always open to everyone. He always encouraged us to come up with innovative solutions while taking into consideration social and economic factors. I will always remember him as a great teacher who dedicated his life to spread construction knowledge across the globe.

— *Amr Sersy*
Group Manager Learning and Innovation, Consolidated Contractors Company

I have known Professor Gerwick for more than 25 years. He was a good friend with the founders of CCC, a leading construction company in the Middle East. On many occasions, CCC founders sought the advise of Professor Gerwick to help solve tough and challenging technical problems in a variety of projects. I recall his valuable advise when we faced problems in construction of the prestressed sections of the Riyadh viaduct, Saudi Arabia; piling and shoring problems in Umm El-Nar power plant in Abu Dhabi, UAE; and his frequent technical contribution to our offshore and marine projects.

Personally, Professor Gerwick guided me through my graduate engineering studies. He also convinced me to pursue my master's degree in construction management at Cal. I took all the graduate courses he offered at the time. His courses were full of practical experiences that he was enthusiastic to share with his students. Some of these problems were from CCC projects. I enjoyed working in multidisciplinary groups trying to come up with innovative and practical solutions for problems in major projects. His office was always open to all students. He was patient and elaborate in answering all our questions. I used to enjoy and learned a lot from the discussions in his office after classes.

After graduation from Cal, I met accidentally with him many times at different airports, usually on his way to a challenging project like the North Sea, the Channel project, and Alaska pipelines.

I will always remember Professor Gerwick as a kind, passionate, intelligent, and caring professor, adviser, and friend. His legacy will surely continue to guide and inspire many engineers in the future

— *Tawfic Said Khoury*
Executive Vice President, Consolidated Contractors Company (CCC)

Professor Ben Gerwick is ranked among the greatest offshore construction engineers in American history, and we shall always hold him in the highest esteem as a true professional and a good friend.

— *Alfred A. Yee*
Precast Design Consultants

I had the opportunity to meet Prof. Ben Gerwick in the eighties, when I was in charge of the studies to prepare the project of a bridge across the Strait of Gibraltar. At that time we were overwhelmed by the task of building "the tallest tower for the longest bridge across the deepest sea." Ben reduced part of this pressure by solving the problem of building gravity supports on the 300-m deep Strait. He applied the technology of prestressed concrete oil platforms that he had contributed to in the North Sea to the somewhat different problem of the design of stiff supports for a multispan continuous suspension bridge. I was impressed by the way he was able to combine extremely broad professional skills and experiences with his teaching abilities. This is only possible from a deep knowledge of the very complex engineering problems he was facing.

Since then, I met him in many conferences and he kept always asking me about the future of such a gigantic project with the fascination of a teenager. Ben has been one of the very few great

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engineers who maintained their stimulating enthusiasm throughout their entire life.

— *Miguel A. Astiz*
Professor of Bridge Engineering, Polytechnic University of Madrid, Spain

I remember when I was very young speaking just after Ben to a construction industry meeting, maybe an ASCE meeting in San Francisco. He was so gracious and supportive, the model of what an engineer should be. I'll never forget his kindness.

— *Gregory Howell, P.E.*
Lean Construction Institute

I had the privilege to be a student of Ben's in the mid-1970s. Stanford and Cal were both on quarter systems then, and cross registration was amazingly simple, so I commuted up to Berkeley twice per week to attend his classes. I never ceased to be amazed and delighted at how apparently effortlessly Ben could teach class on a Tuesday morning, hold office hours, take off for a marine construction project on the Alaskan North Slope, in the South China Sea, off the coast of Norway, or somewhere else across the planet, and then show up again for class on Thursday morning with all of the homework for that week graded, ready to give another flawless lecture. After just reading Ben's informative and uplifting autobiography, *A Bridge Beyond* (which I heartily recommend to everyone who has a passion for construction), I know how he did this. It turns out that Ben slept very little and used airplane time to prepare for both his world-leading consulting practice and his world-leading classes in marine construction. Ben has inspired me and countless other students by his brilliance; his passion for designing and building great structures of all kinds; especially bridges and offshore platforms; by his modesty; and his ever-present, shy smile.

Thank you, Ben Gerwick, for the inspiring example you have given all of us, through your exemplary life as an engineer-educator.

— *Raymond E. Levitt*
Stanford University

I had the pleasant experience of working with Ben Gerwick on several occasions. First, in 1954–1955, while I was still a student at Purdue University, I was employed by J.H. Pomeroy and Co., Inc. in San Francisco and encountered Ben Gerwick because of several joint projects. Later, in 1964–1965, I was employed on several Pomeroy projects conducted by Ben C. Gerwick, Inc., which was by then a subsidiary to Pomeroy. These included several bridges, a slurry wall foundation, an offshore island, and others. Under the guidance of Ben and his team, I soon learned how to approach a problem and try to come up with an innovative solution that was quite often not in the book. This period was a great learning experience for a young engineer, and I have carried some of his ideas with me ever since. Prof. Gerwick joined the UC Berkeley faculty after I received my doctorate there, so we never overlapped. But on numerous occasions after I joined the faculty at the University of Washington, I renewed his acquaintance whenever I visited Berkeley or at other professional meeting opportunities.

My association with Professor Gerwick has been an important part of my life, and I shall be forever grateful for having known him.

— *Ronald L. Terrel, Ph.D.*
Emeritus Professor of Civil Engineering, University of Washington

We feel so sorry about the death of Mr. B. C. Gerwick. The world has lost a well-known expert and scholar, while we have lost a good friend.

Although we have no direct communication with Mr. B.C. Gerwick, the Gerwick Company has left us with a deep impression.

As early as 2002, we had quite a number of technical and construction problems during the Donghai Bridge construction. Several international meetings were held to work out solutions. Mr. Robert Bittner, the expert leader of the Gerwick Company, flew from the United States to join the seminar and contributed his talent.

In addition, we often receive magazines from the Gerwick Company. The company has done a lot for Sino–U.S. exchange and cooperation.

— *Tang Wei*
President, Shanghai Municipal Engineering Design General Institute

The senior staff at Bergmann Associates has had a close working relationship with the senior staff at Ben C. Gerwick, Inc. over the past 10 years. We have worked as a team on several large navigation project designs for the USACE, including the new Braddock Dam, the new Charleroi Locks, Kentucky Lock Addition, and Chickamauga Lock Replacement. Throughout our work on these projects, Ben was involved with concept reviews, brainstoming sessions, value engineering analysis, and providing general construction advice to the team. His opinions were always very insightful, well-spoken, and kindly offered. His viewpoints on the innovative issues were also highly valued by our clients. In particular, his comments in 1997 in support of using in-the-wet and float-in technology for constructing the new gated dam at Braddock Locks and Dam were probably the key in the USACE, Pittsburgh District's decision to proceed with innovative design and construction using these methods. This served to somewhat revolutionize the inland navigation structure construction industry. It was my, and our staff's, distinct honor to have known and worked with Ben and his BCG firm.

— *Bill Miles*
Director of Civil Works, Bergmann Associates

When I heard that Professor Ben C. Gerwick, Jr. of the University of California at Berkeley had passed away on Monday, December 25, 2006, I was shocked and extremely saddened. He was 87. Professor Gerwick was named one of the top 100 engineers of the twentieth century. His contributions to the field of civil engineering and construction are noted all over the world.

On a personal note, he was like a second father to me, who encouraged me to pursue my Ph.D. in concrete materials. I took every course he taught at Berkeley and was his teaching assistant for many years, sometimes as a volunteer TA. He was a tireless teacher, who traveled to different continents to serve on many advisory boards between his classes and was always enthusiastic about what he was teaching and graded every single exam and piece of homework by himself. He served on my master's and Ph.D. committees as well.

He was a remarkable engineer, professor, and role model for many who were fortunate enough to get to know him in person.

It is an enormous loss to his admirers and the field of civil engineering.

— *Kamran M. Nemati, Ph.D., P.E.*
JSPS Visiting Professor, The University of Tokyo and The University of Washington

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Ben was a brilliant engineer, but he was also able to lead and inspire people because of his human qualities and his sincere interest in others. He respected others and encouraged their best efforts while setting a high standard of professional excellence and ethical behavior. Ben was the ethical and professional compass for his company and for many engineers in our profession. We all consider ourselves fortunate to have known and worked with Ben. We will miss him dearly and will continue to long remember him.

— *Robert B. Bittner*
Ben C. Gerwick Inc.

I consider myself extremely lucky to have been one of the many people touched by Prof. Gerwick's sense of duty, dedication, and ethics. He was one of the true giants of our profession.

He lead by example and demonstrated how one can be a world-class researcher, practitioner, and teacher, all at the same time. It presents enough challenge to have only one of these attributes, let alone all three. He will be missed.

— *Amr A. Oloufa*
University of Central Florida

Ben Gerwick was a gentleman, businessman, engineer, and professor. He apparently was a wonderful family man, too, as recounted in his recent narrative biography, *The Bridge Beyond*.

I had the privilege of knowing him as a professor, as a colleague, and as a confidant for 32 years. He always seemed to carry himself the same way—thoughtful, dignified, and attentive. My first exposure to Ben was as a student in his international marketing class in 1974. This was an unusual class, in part because it was a business-oriented course in the civil engineering department and in part because it had so much practical information. One of the course assignments was to create a brochure for a product or professional service and then make a marketing presentation to him. Having just concluded a year working for a geotechnical firm, I expected my presentation to be straightforward. It quickly became apparent that Professor Gerwick had more experience and insight about Pennsylvania soils than I thought. That was one of his remarkable traits—an astounding storehouse of engineering knowledge about details in any part of the world—California, the Artic, the Middle East, even Pennsylvania.

Another memorable Gerwick experience was my interview for a Berkeley faculty position. After a solid, detailed discussion about technical aspects of construction risk management, he asked me a question that cut to the key point: "Why do you want to teach at Berkeley?" I talked about the school's reputation, the quality of faculty, the idyllic Bay Area location, and almost as an afterthought, the quality of students. Ben agreed with all these features but especially lit up when the issue of the students came up. I think this was by far and away the most important aspect of Berkeley to him.

In later years, I had the privilege of working with him. He garnered amazing professional accomplishments along the way. Once, while giving a lecture to a large professional audience, he was introduced by way of his prizes and awards. The list ran 3 pages long, and that was only for the preceding 15 years.

The last point I want to recall about Ben concerns his regard for teaching. He once came into that same 8 a.m. marketing course mentioned above initially somewhat disheveled and disorganized, but he quickly regained his footing. It was only later in the class that we learned that he had just returned to Berkeley after an all-night flight from London. That commitment to his students and that ability to present himself under the most trying of circumstances are characteristic of Ben Gerwick.

— *William Ibbs*
Professor of Engineering & Project Management, Dept. of Civil and Environmental Engineering, University of California, Berkeley, Berkeley CA 94720.

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