IMPACT

Kansas State University College of Engineering Vol. 30, Number 1 Winter 1995

KSU profs patent quake-resistant design

An invention patented by three Kansas State University civil engineers could be the next wave in making high rise buildings and bridges earthquake-resistant.

The invention, which is an advance in base isolation systems, lets the foundation of a structure move with the earth while buffering the upper stories or deck.

For 20 years the K–State civil engineering team has pondered the perplexing problem of how to make a supporting structure that is both flexible and strong.

Their insight, which ultimately led them to the patented innovation, is to decouple the two necessary properties of a building. That is, assign strength to one member of a structure and flexibility to another—in this design, large hollow concrete columns provide strength while slender steel pipes arrayed within the columns provide flexibility and damp the motion of the building with respect to the ground.

Bearing pads mounted atop each column let the upper stories move laterally on the pads in an earthquake. The overall design is particularly suitable for multistory buildings, bridges and heavy structures like nuclear power plants.

Philip Kirmser, Kuo Kuang "Tony" Hu and Stuart Swartz received a patent effective Feb. 7, 1995, for their invention, "Stiffness Decoupler for Base Isolation of Structures." The patent is assigned to the KSU Research Foundation. A patent exists in Taiwan and applications are pending in China and Japan. The overall patent is to be extended to include residences and single story buildings.

According to Hu, the stiffness decoupling concept helps reduce the shear responses in the upper stories to just slightly more than that of the typical wind force. The design can control the dynamic behavior of a structure while providing the desirable load carrying strength, damping strength and the natural frequency of its movement.

"We have designed this to use decoupling and friction as the means of reducing the effects of ground motion on structures," he said.

Kirmser said the design includes additional multilevel safety elements, making it a much safer design. "We've added devices to prevent the building from toppling over," he said.

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Martin wins Conoco award

Karen M. Martin, whose motto "lift as you climb" is said to describe to perfection her work with minority students, has won Kansas State University's 1994 Conoco Presidential Award for Distinguished Services to Minority Education.

Karen Martin

Martin was recognized for her contributions to the advancement of students of color at 9 a.m. Saturday, Dec. 10, during commencement exercises at Bramlage Coliseum. The 16th annual award provides a citation

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KSU researchers apply composites to highway and bridge uses

High performance composite materials have been around for 50 years, and are used in aircraft wings, bullet proof vests, medical implants and surfboards. But composites have made few inroads in highway and bridge construction.

Builders and contractors would like to replace existing materials that corrode or have other drawbacks with composites. The bottleneck is a lack of standard laboratory tests that can simulate the 50–year design life of the structural components that would be built with these materials and new adhesives.

Two Kansas State University engineers are investigating tests that might be suitable for measuring durability of composites and adhesives for highway construction.

Chemical engineer John Schlup and civil engineer Hani Melhem presented preliminary results of their research at two national conferences in November.

Composites are mixtures of two dissimilar materials to get new physical properties. The most common types have been glass or ceramic fibers embedded in a plastic matrix. Accord-

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Dean Don Rathbone accepts Western Resources' first pledge payment for the Manufacturing Learning Center from Stacy Kohlmeier.

Western Resources pledges $125,000 to new manufacturing center

Western Resources, Topeka, has pledged a total of $125,000 over five years toward the operating expenses of the College of Engineering's new Manufacturing Learning Center (MLC).

In making the pledge, Western Resources representative Robert Tate wrote that he applauded the College of Engineering's efforts to "identify value-added services that can be provided to assist in the economic well-being" of Kansas companies.

The Manufacturing Learning Center opened in January, It is located in Manhattan's industrial park, east of the downtown area.

The MLC will give Kansas manufacturers a unique opportunity to use new manufacturing equipment in a state-of-the-art facility.

KSU gets Sloan Foundation grant

The Alfred E. Sloan Foundation of New York City has awarded Kansas State University $172,500 for a three–year project to aid women and minority scientists and engineers in the early stages of their university careers.

Each year for the next three years, up to six women and minority assistant professors in the sciences and engineering will be paired with senior faculty mentors and provided with financial assistance to develop competitive research programs.

"Women and minority scientists and engineers often face difficulties at the beginning of their careers," Coffman said. "Starting up a laboratory and developing a research project call for resources and informal contacts. Sometimes women and minority scientists and engineers find it difficult to access informal networks so important to professional success."

Sloan awards are competitive and made by a special committee. Coffman will appoint a committee to make the selections. Each winner of a Sloan award will be paired with a senior faculty mentor. Mentors will be available to discuss grant proposals, help with setting up a laboratory, provide access to specialized equipment and review manuscripts for submission to journals. The mentorees will meet frequently as a group to talk about common problems.

As Sloan mentorees succeed in winning external funding, they will be replaced. Coffman said that during 1993–94, participants in the KSU pilot mentoring project funded by the Sloan Foundation won more than $500,000 in external support.

"The KSU–Sloan Foundation mentoring project for women and minorities in science and engineering is unique in American higher education," Coffman said. "I believe that it will serve as a model for other institutions to use in recruiting and retaining women and minority members in engineering and the sciences."

Profs develop quake-resistant design

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According to Hu, the design should also protect the contents of structures during a quake. "Only a small fraction of the lateral acceleration is transferred up into the upper structure, so people there would not feel much," Hu said, "and the contents as well as the structure should not be damaged."

The concept of base isolation has existed for 100 years but has only come into acceptance among engineers and builders in the past decade. Right now, only 125 structures in the world employ such a system.

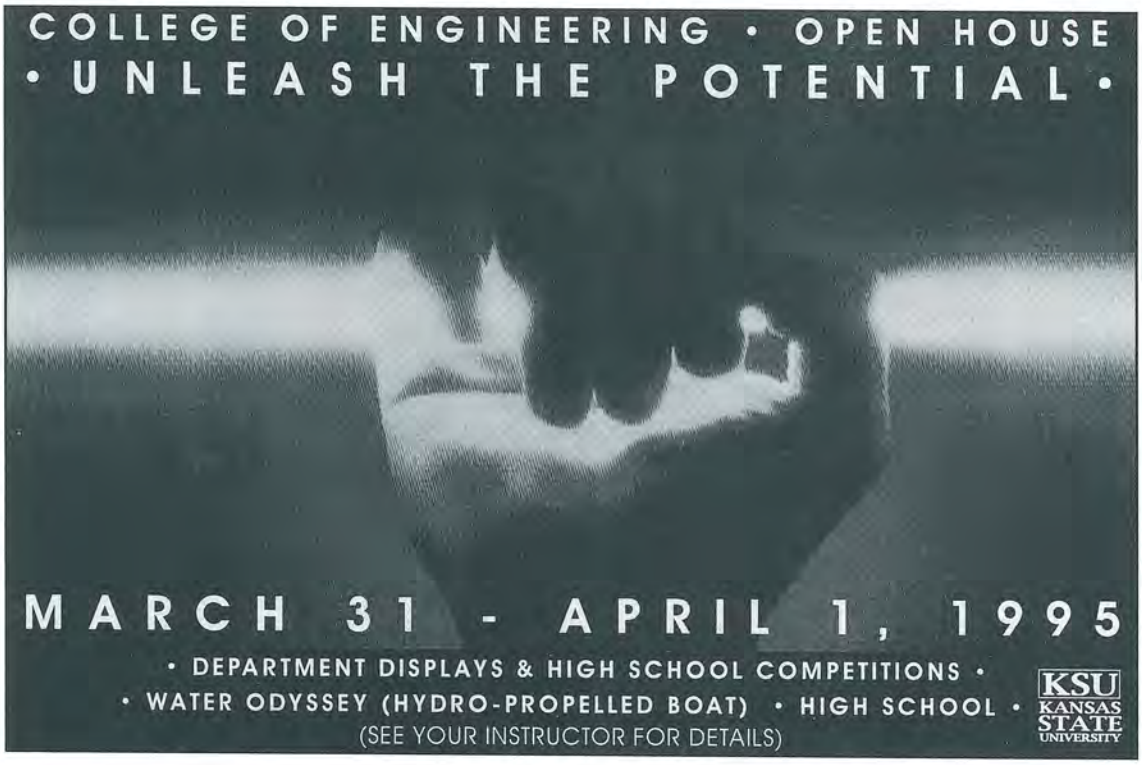
Instead of resisting the large forces generated by earthquakes, base isolation systems let the structure experience the large relative displacements during ground motion to reduce earthquake forces by a factor of five to 10.

The KSU invention relies on commonly used construction materials like concrete and steel pipes and on standard construction methods. That will make the new system relatively inexpensive to install.

Competing systems rely on expensive rubber bearing pads that get damaged in a quake or deteriorate over time and so must be replaced.

A KSU engineering graduate student, Sanjay Gattani, conducted research to evaluate the ability of the building design to perform during the most severe recent earthquakes. His computer analysis demonstrated the ability of the protected structure to handle large quakes, even given uncertainty of the magnitude of the quake.

Gattani compared the performance of a building with stiffness decouplers and a regular building and found superior performance of the new base isolation system.



Schedule

Friday, March 31, 1995

Engineers' Open House Parade . . . . . Noon
(Mid-Campus Drive)
Engineering Opening Ceremonies
(Front steps of Seaton Hall)
Torch runner's arrival . . . . . 12:10 p.m.
Presentation of Yellow Brick Award . . . . . 12:15 p.m.
Crowning of St. Pat and St. Patricia . . . . . 12:25 p.m.
Engineering Awareness Seminar for High School Students
(Paslay Lecture Hall, Durland Hall)
Registration . . . . . 1:30 p.m.
Seminar . . . . . 2-4 p.m.
Engineering Student Displays and Open House of Facilities
(Durland, Seaton and Ward halls) . . . . . 5:30-9 p.m.
Industrial Displays
(Durland, Seaton and Ward halls) . . . . . 5:30-9 p.m.

Saturday*, April 1, 1995

High School Design Contest
Registration (Durland Hall Atrium) . . . . . 8-9 a.m.
Steel Ring Honorary Alumni Reception
(Sunflower Room, K-State Union) . . . . . 9-10 a.m.
High School Design Contest
(Durland Hall, Paslay Lecture Hall) . . . . . 9 a.m.-noon
"Water Odyssey" design competitions
Engineering Student Displays and Open House of Facilities
(Durland, Seaton and Ward halls) . . . . . 9 a.m.-4 p.m.
Industrial Displays
(Durland, Seaton and Ward halls) . . . . . 9 a.m.-4 p.m.
Engineering Alumni Luncheon; limited seating
(Flinthills Room, K-State Union) . . . . . Noon
Engineering Social Hour
(Cats Pause, K-State Union) . . . . . 5-6:15 p.m.
27th Annual Engineers' Open House Banquet . . . . . 6:30 p.m.
(Main Ballroom, K-State Union; advance reservations only)

*Saturday is also "All University" Open House at KSU.

Reservation form

Check off those events you will attend and return this form with payment to the address below.

___ I plan to attend the Engineering Alumni Luncheon on Saturday, April 1, 1995, and have enclosed my check for ____ tickets at $5 per person. (Contributors to scholarship funds and other funds and activities administered through the Dean's Office are invited as guests of the College of Engineering.)

___ I plan to attend the Engineers' Open House Awards Banquet on Saturday, April 1, 1995, and have enclosed my check for ____ tickets at $9.50 per person.

___ I will attend the social hour at the Cats Pause, K-State Union. Please reserve ____ places for me.

_____
Name

_____
Address

_____
Phone

Please make checks payable to the KSU Foundation. Deadline for reservations is **March 17, 1995**.

Return this form to:
Donald E. Rathbone
Dean of Engineering
Kansas State University
142 Durland Hall
Manhattan, KS 66506-5104

KSU researchers test materials for future highways

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ing to Schlup, the biggest hurdle to the wider acceptance of fiber-reinforced polymers is the uncertainty about their long-term behavior and the behavior of the adhesives used in joints and connections.

"Under the combination of highway loads and adverse environmental conditions, how the materials would perform is an unknown right now," he said. He added that standard accelerated tests have to be designed to simulate the aggravated, environmentally induced, deterioration of the materials under cyclic and sustained heavy loads and such tests must account for interactions between loads and the environment.

Based on tests of small-scale specimens of new composites and adhesives provided by Beech Aircraft, Schlup and Melhem conclude that accelerated environmental aging can be simulated with tests that include continuous high-temperature, high humidity and wet-freezedry cyclic testing.

Tests should be performed on specimens made from reinforced concrete with plastic reinforcement bars, prestressed concrete with fiber-reinforced polymer tendons, and with commercially available fiber-reinforced polymer pultruded shapes. Connections can be either by means of mechanical fasteners or by adhesive bonding.

"Temperature is an essential factor in studying mechanical properties of fiber-reinforced polymers, accelerated environmental aging and product life," Melhem explained. "As data analysis leads to estimates of the lifetimes of the composites, temperature must be included in the analysis."

Other environmental factors should include hot, humid conditions, freeze-thaw cycles and water immersion.

They recommend using statistically designed experiments to minimize the number of samples required. Additional research is needed to determine the essential properties of structural adhesives for these applications if we're going to use them in bridge construction and rehabilitation, Schlup adds.

Melhem said plans are for the K-State civil engineering department to construct a unique facility in which to perform accelerated testing of highway components including pavement and concrete slabs.

In addition to mechanical testing, the facility will be used to study accelerated environmental aging under controlled temperature and moisture conditions and to study the combination of loads and temperature. Both traditional and new materials can be tested at the new facility, which Melhem will direct.

The Kansas Department of Transportation, the Kansas Technology Enterprise Corporation and an industrial partner, Cardwell International, El Dorado, Kan., are cooperating with the KSU College of Engineering to set up and equip the facility.

Conoco picks Martin for education award

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and a $1,000 cash award presented by K-State President Jon Wefald.

Martin is director of the minority engineering program. This program encourages and supports minority students studying for degrees in engineering.

"The committee's decision to select Martin as this year's award recipient was swift and unanimous," said Reginland McGowan, chair of the Conoco selection committee. "In her line of work it would be easy to focus on obstacles rather than opportunities. It was crystal clear to the committee that Dr. Martin had focused her energy on opportunities, including the procurement of external funds necessary for the success of the minority engineering program."

Martin came to K-State in 1988 as an adviser and instructor in the athletic department. She later became an academic counselor in educational support-ive services. She took over her current position in March 1993.

"Since Martin accepted the position of director, she has worked extremely hard to upgrade the program and to improve its effectiveness in terms of increased recruiting, retention and graduation rates," said Kenneth Gowdy, associate dean of engineering.

Under Martin's leadership, enrollment of minority students in the College of Engineering has increased by 20 percent and her success with grants has added at least $50,000 to the program from Southwestern Bell and Arco.

Martin's accomplishments as director include a restructured scholarship program, a remodeled student study center and an increased number of workshops to assist students.

"She is one of a few people who knows and understands the importance of 'seeing possibilities and challenges' instead of doubts and negativism when working through institutional barriers," said Anne Butler, director of the women's studies program at K-State. "She stands as a competent and caring administrator, trusted counselor, mentor and friend."

Martin also serves as adviser for four minority student organizations—American Indian Science and Engineering Society, National Society of Black Engineers, Society of Hispanic Professional Engineers and the Society of Women Engineers.

Martin also will be honored at a reception during Martin Luther King Jr. observance week in January.

Martin received a bachelor's degree from Xavier University in 1978 and a master of communication disorders degree from Louisiana State University Medical Center in 1979. She earned her Ph.D. from Kansas State University in 1993.

The award is supported by a grant from Conoco/DuPont in recognition of outstanding minority education and is coordinated by the KSU Foundation.

New KSU center focuses on pollution prevention assistance

Kansas State University now has a center devoted to providing Kansas businesses with the assistance they need to remove wastes from their manufacturing processes. The Pollution Prevention Institute (PPI) offers assistance in finding ways that will make those processes safer and, in the long run, more economical.

The focus of the institute is outreach and direct technical assistance in at-the-source prevention of waste, especially hazardous wastes.

"Response to our past program was overwhelmingly positive," said Michele Feenstra, director of the new institute. "There has been an increased interest from businesses, regulatory agencies, technical assistance groups, trade associations, and private citizens from throughout the Midwest. The demand for services is steadily increasing, with no sign of abatement."

PPI specialists identify economically feasible methods to reduce and control hazardous wastes through free assistance, including confidential on-site assessments; training seminars, workshops and presentations for industry groups; information disseminated through fact sheets, publications and reports; and answers to questions by phone and mail.

The Pollution Prevention Institute will also bring advantages to the KSU College of Engineering.

In addition to the recognition it will bring, the institute will provide direct outreach to businesses. This provides opportunities for applied research, tech-transfer, student internships and public-private partnerships, as well as a direct link to employment opportunities for KSU graduates.

The institute may also open the door to more help.

"Creating the KSU Pollution Prevention Institute increases opportunities to expand services through additional extramural support," said Richard B. Hayter, the college of engineering's associate dean of extension and outreach, who is responsible for overseeing the institute's activities. "It will also give KSU capabilities similar to those of other universities, such as the Iowa Waste Reduction Center at the University of Northern Iowa and the Toxics Use Reduction Institute at the University of Massachusetts."

Michele Feenstra

The PPI will foster cooperation with other KSU departments and already serves as a meeting ground for engineering faculty to share ideas and activities.

Professors develop highway construction system

Less stress and fractures on concrete highways would reduce the number of potholes drivers encounter. And drivers wouldn't have to stop for road construction and detours as often.

Stronger and safer concrete highways may result from a new development at Kansas State University.

Four K-State professors in the College of Engineering have patented a load transfer system called X-FLEX for use in highway construction.

"The system is made like a truss to transfer the shearing forces," said Philip Kirmser, professor emeritus of civil engineering. "The system uses about 80 percent less steel than the usual dowel method and is twice as strong."

The program began with a grant from Cardwell International Ltd., El Dorado, which holds the trademark, Kansas Department of Transportation and Kansas Technology Enterprise Corporation.

X-FLEX has several economic benefits. "This system will cut production costs and reduce the need for continual repairs," said Kuo Kuang Hu, professor of civil engineering.

Its innovative covering is especially important as temperatures begin to fall and roads are covered with snow and chemicals. "The system has the feature of a plastic or rubber covering that will expand with the rise and fall of temperatures, like a spring. There will be fewer cracks and potholes so the state will be able to use the money to build more new highways."

Stu Swartz, civil engineering department head, and Mustaque Hossain, assistant professor, also are participants in the project. X-FLEX is licensed to Cardwell International through the KSU Research Foundation.

BAE student design team wins

A senior design team from Kansas State University placed first in the American Society of Agricultural Engineers national student design competition Dec. 14 in Atlanta.

This is the ninth time KSU students have won the national competition.

The team, from the department of biological and agricultural engineering, designed a pneumatic down-force system for row crop planters.

"The design adds an air spring to the planter suspension linkage to allow rapid adjustment of planter unit down force from a central location," said adviser Mark Schrock, a professor in the department.

He said the pneumatic system also reduces the variation in down force as the planter moves through depressions or other irregular terrain. One of the key objectives was to enable a single planter to perform in no-till as well as conventionally tilled seedbeds.

Stephen K. James (CE '48) retired from the K.C. District Corps of Engineers in Dec. 1987 and is now employed part-time as horticultural assistant and master gardener coordinator for the Johnson County Extension Service, Olathe, KS.

Herbert Metz Timm (ChE '51), Topeka, KS, has written a book of poetry, *Collected Poems*, which KSU President Jon Wefald has placed in the KSU Library.

Ray Loyd LaRue (IE '56), Dubuque, IA, retired in Oct. 1994 after 38 years with John Deere.

Ralph L. Webb (ME '57) has been an ME professor at Penn State Univ. since 1978. Prior to that he had been with The Trane Co. as manager of heat transfer research. In 1994 his book, *Principles of Enhanced Heat Transfer*, was published, and in 1993 he became founding editor of the international *Journal of Enhanced Heat Transfer*. A Fellow in ASME, he has been active in the organization, receiving awards, chairing divisions and serving as a journal editor.

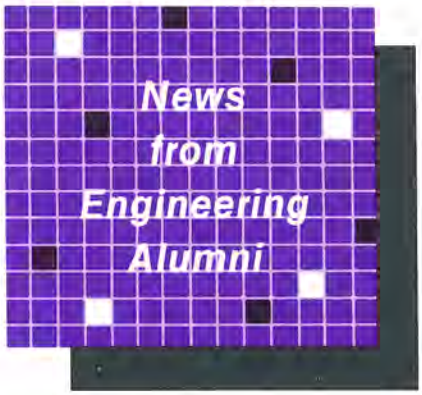
Allen Hjelmfelt (CE '59), Columbia, MO, has been named a Fellow of the Indian Assoc. of Hydrologists, Roorkee, India.

Edward L. Bethel (EE '59) is retiring at the end of 1994 after 35 years with Eberline Instrument Co., engineering department. He resides in Santa Fe, NM.

Dan L. Jilka (EE '59), Seattle, WA, senior technical recruiter, recently returned from the ARINC Aerospace and Avionics trade delegation to Russia and Poland.

R. D. Fogo (CE '59), Wichita, KS, retired in Dec. 1994 after serving 29 years with the Kansas Turnpike Authority, first as an assistant and the past 19 years as chief engineer and general manager.

William D. Rexroad (EE '59) has sold the business he started in 1978—Electrex, Inc., a manufacturer of electrical wiring harnesses, and is now



running Design Services, an engineering consulting firm in Hutchinson, KS.

Roger L. Riggert (EE '61) retired in April 1994 after 33 years with AT&T and Southwestern Bell. He has now formed a consulting company in Annondale, NJ, RLR Resources, specializing in telecommunications regulatory issues.

James M. Vredenburg (CE '61), Arlington, TX, retired in July 1994 after more than 32 years of government service with the Corps of Engineers and Bureau of Reclamation.

Ashok R. Bendre (M.S. ChE '63) is president of Premier Professional Services, Inc., Libertyville, IL, a consulting business that deals with marketing, planning and tech transfer, as well as full engineering services. Its focus markets are pharmaceutical/health care, food processing and chemical process industries. His daughter Rpali recently graduated from the Univ. of Wisconsin, and his son Anup will soon enter medical school.

Douglas Williams (AgE '67), Los Osos, CA, is an AgE professor at Cal Poly currently involved in research with a waste digester that turns organic materials into usable by-products. The project, in a partnership with Lockheed, has the potential use of supporting life in advanced space missions.

Peter Thomas (NE '68), Rockford, IL, is Director of Marketing, Product Development & Quality Assurance, for Hydro-Line, Inc., a manufacturer of hydraulic and pneumatic cylinders and servoactuators. He and his wife Mary Kay are parents of three daughters and one granddaughter.

Ronald E. Seery (IE '72) and his wife April announce the birth of their first child, William Robert, Oct. 20, 1994. Ron is retired from the U.S. Army and staying active in volunteer work in Enterprise, AL.

David Handkins (IE '74) and his wife Debbie, Cincinnati, OH, announce the birth of triplets, Elliot, Rachel and Gavin, Nov. 5, 1994. They join their sister Bridget, 4.

Donna Kottwitz (ChE '75), Missouri City, TX, was recently honored as a "Woman of Excellence" by the Federation of Houston Professional Women for her engineering accomplishments and involvement in the Society of Women Engineers. She was a charter member of the KSU SWE Section and helped charter the Houston Area Section, serving as its first president. She is currently a senior engineer in the portfolio dept. of Agip Petroleum Co., Inc.

Timothy L. Urban (IE '77) is assoc. professor and chairman of the Department of Quantitative Methods and Management Information Systems at the Univ. of Tulsa and has recently received two awards from the college of business administration, the Mayo Excellence in Research Award and the Dean's Teaching Innovation Award.

Tony Knopp (ME '78) accepted a promotion and transfer in Jan. with Schlage Lock Co., Tecate, Mexico, as manager of their fabrication plant. He and his wife Sue also announce the birth of a daughter, Emily Sue, Sept. 7, 1994.

Ryan McGuire (ChE '79), Akron, OH, has recently been promoted to senior marketing service specialist for Japan and Mexico for Advanced Elastomer Systems.

Dave Douglass (ME '81) has been promoted to manager of manufacturing operations with responsibility for high energy products and services with the Kansas City Division of AlliedSignal Inc.

Jeffrey B. Dorsch (IE '82) and his wife Sherri, Apple Valley, MN, announce the birth of their third son, Jonathan Michael, March 5, 1994. His brothers are Daniel, 4, and David, 2. Jeff is a manufacturing engineer with Graco Inc., a manufacturer of industrial pumps and fluid handling systems.

Don Jermain (IE '82) and his wife Donna announce the birth of their second son, Brian James, Nov. 2, 1994. Don is a senior manufacturing engineer at Intermedics Orthopedics Inc., Austin, TX.

William E. Kramer (ME '82, M.S. '84) received his Ph.D. in ME from Colorado St. Univ. in May 1994. He is manager of Automative Systems and Technology group at Idaho National Engineering Laboratory.

Jim Giroux (ARE '83) was recently hired as an engineer for Lindal Cedar Homes–Sunroom Division, Seattle, WA.

Kelly Peck Arora (IE '84) and her husband Nitu announce the birth of their first child, Katherine, Sept. 14, 1994. Kelly is currently a full-time mother in Fenton, MO.

J. Don Book (ME '84), Westminster, CO, is a member of the technical staff at AT&T Global Business Comm. Systems. He received his M.S. in computer integrated manufacturing in 1994 from Brigham Young Univ. He and his wife Rebecca have two children, John, 4, and Kendra, 2.

James L.E. Meats (ARE '84) has formed a consulting engineering firm under the name of MPE, Inc., Springfield, MO.

Kimberlee A. Nelson Martin (IE '86) and her husband Steven, Lenexa, KS, announce the birth of their second child, Blake Steven, Oct. 10, 1994. He joins his sister, Hillary, 3. Kimberlee has been employed by Hallmark Cards Inc. since graduating.

Robert G. Wald (EE '86), Boulder, CO, has accepted a position as Product Marketing Mgr. in charge of advanced networking product development for McDATA Corp., exclusive provider to IBM's Large Systems Division for high speed mainframe switching products.

Todd Postier (IE '86) and his wife Janet (Bak. Sci. '88) announce the birth of their first child, Brandon Michael, Oct. 27, 1994. Todd is an industrial engineer with the federal government at the Defense Plant Representative Office associated with Boeing in Wichita, KS. He is also currently working on his M.S. in industrial/mfg. engineering at Wichita State Univ.

Daren Shumate (ARE '87) and his wife Daniela announce the birth of their first child, Carl Eitl, June 16, 1994. Daren is an electrical engineer at GHT Limited Consulting Engineers, Arlington, VA.

Kirk J. Duncan (EE '87) and his wife Lisa celebrated their 11th anniversary in Aug. They have recently refurbished a 45-year-old home in the historic Westheights District of K.C., KS. Kirk is a staff engineer in the T&D dept. at Burns & McDonnell, and working towards an M.S. in engineering. management at the Univ. of Kansas.

Greg Korte (CNS '87) married Nicole Baloh, a graduate of UCSD San Diego. They live in Las Vegas, NV, where Greg is vice president of Kerzetski-Bellew & Assoc. Construction Co.

Chris Lewis (ME '87), completed his Ph.D in EE at Univ. of Purdue and is now working at Sandia National Labs, Albuequerque, NM, in the Intelligent Systems Principles division conducting research and development on robotic systems.

Jamil S. Khalidi (ME '88) and his wife Marcia announce the birth of a daughter, Alia, Sept. 20, 1994. She has two brothers, Tarek, 5, and Ramsey, 3. Jamil is an advanced technology development analyst with Boeing, Wichita, KS.

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What's new?

We'd like to know—and so would your former classmates. Please take a few minutes to jot down job changes, professional or other activities, your retirement or remembrances you'd like to share. Use this form, or write to Mike Dorcey, the editor of IMPACT, using one of the addresses to the right.

Name

Major/Class year

Address

News for IMPACT

Return to: IMPACT Editor, College of Engineering, Kansas State University, 146 Durland, Manhattan, KS 66506-5104, or fax to 913-532-6592 or E-mail to mdorcey@oz.umb.ksu.edu

Tom Kaufman (AgE '88) and his wife Sherry, Hillsboro, KS, announce the birth of their first child, Bailey Ann, Oct. 21, 1994.

Bryce St. John (MET '88) is a field service engineer with Babcock & Wilcox and is being transferred from Cincinnati, OH, to Benicia, CA.

Suzanne M. Proctor Moore (IE '89) and her husband Kent (AgEcon '89), Iuka, KS, announce the birth of a daughter, Madison Leigh, Oct. 26, 1994. Their son Brian is 3.

Ericka M. Foley (ME '89), Overland Park, KS, adopted Paige Janelle Foley (born 5/29/94) on July 15, 1994.

Brian Grimm (AgE '89) and Jana Fielder Grimm (El. Ed. '89) announce the birth of their first child, Brianna Danielle, March 17, 1994. They returned to the the Midwest in the fall of 1994 after a three-year management assignment in Calif. Brian is employed by Moorman Mfg., Quincy, IL.

Wendy Wittmer Cain (ARE '90) is employed by Smith Seckman Reid Inc., consulting engineers in the health care field. She and her husband Rich (Marketing '89) live in Houston.

Glenn W. Hubbard (CE '90) and his wife Jill announce the birth of their second child, Brian Keith Scott, Oct. 27, 1994. He joins his sister Brennan, 4. Glenn was recently promoted to Lt. in the USN Civil Engineers Corp. He is shop engineer and Seabee division officer at the Public Works Dept., Naval Air Station, Brunswick, ME.

Ishwinder S. Brara (EE '91) married Harneet Bhatia July 23, 1994. He is currently a design engineer at Loral Electro-Optical Systems, Pomona, CA.

Ryan McGuire (IE '92) is employed as an analyst for ABF Freight System, Inc. He married Michelle Swim (KSU '93) in Feb. 1994 and they live in Fort Smith, AR.

Rich Holland (ME '94) and his wife Wendy live in Sunnyvale, CA, where Rich is a UNIX System administrator with Synopsys Inc.

DEATHS

Lester W. Servis (CE '26, M.S. '34) died Nov. 25, 1994, in Bellevue, NE. He worked for the Union Pacific Railroad, the Kansas Highway Commission, and served as city manager of Hays, NE, from 1942–45. He formed a partnership with L.M. Van Doren in 1946 and later was one of five principals in founding Capitol Engineering Co., Topeka, KS. He was a life member of Sigma Tau (Tau Beta Pi), was a registered professional engineer and was the president of the Kansas Engineerng Society in 1956. He was preceded in death by his first wife, Mildred, in 1973, and his second wife, Dottye, in 1983. He is survived by one granddaughter and one great-grandson.

Jack W. Deakins (EE '40) died March 30, 1994, in Vacaville, CA. He had retired from Bechtel, S. F. in 1982. He was a member of the 1989 KSU College of Engineering Hall of Fame, and is survived by his wife, Kay, one daughter, and six grandchildren. He was preceded in death by a son.

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Gale Simons